IDG .net



Check out the latest gizmos, gadgets and games in our annual "Cool Stuff" feature. Page 62



COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
December 22, 1997 · Vol. 31 · No. 51 · 104 pages · $3/Copy $48/Year

Lessor beats odds, retrofits R/3

By Randy Weston

BIG SIX CONSULTING firms said, "No way." SAP AG said, "You're on your own."

But GATX Capital Corp., an asset management and leasing firm, was determined to buck conventional wisdom and do the unthinkable: force SAP's R/3 business process automation software to fit its business rather than the other way around.

ENTERPRISE APPLICATIONS

The problem was that R/3, like other enterprise resource planning systems, doesn't do leasing or asset management. But GATX does.

"SAP made it clear up front they don't do asset management and that if we were going to go in this direction, we were on our own," said Michael Cromar, chief financial officer at the San Francisco-based firm. "But we believed we could bring the compound transactions needed for leasing transactions from functionality already in SAP by making bolt-on front ends."

Two years after making the decision, GATX is ready to go live Jan. 1 with its R/3 system, which replaces a legacy mainframe system.

Not only will R/3 manage GATX's 44,128 equipment and asset records, which total $5 billion, but it also has been customized to handle complex leasing arrangements such as those for commercial aircraft, railcars and barges.

GATX, page 88

E-commerce = E-returns

▸ *Sites may find return process more cumbersome*

By Sharon Machlis

JUST LIKE their brick-and-mortar counterparts, online retailers are bracing themselves for a postholiday tradition: holiday gift returns.

Many World Wide Web sites will get their first taste of high-volume refund requests later this week. Analysts predict $1 billion in holiday cybershopping, which could mean $100 million in returns if the real-world ratios hold up in the online world.

And industry watchers expect

E-retail, page 88



CHRISTOPHER WEIL

Inside the Research Board

By Kim S. Nash

Beyond the wooden door of the Research Board, with its gold plate discreetly bearing the letters "RB," lies an elegant four-story townhouse with burnished wood paneling, antique furniture and views of a private courtyard.

A uniformed maid pours tea from a silver pot into china cups rimmed in gold.

In this stately setting, billions of dollars worth of corporate technology decisions have been influenced for nearly a quarter of a century.

Take a rare look inside the Research Board, Inc., a very private and influential club in New York for chief information officers at the world's biggest companies.

Research Board, page 20

On the road again? Like many companies, **Greylock Management Corp.** had **no strategy** for safeguarding the information its staff stored on laptops while on business trips — until last year. That's when the Boston venture capital firm went to an **Internet-based backup service,** says **Mary Murphy,** the company's chief financial officer. Analysts expect **more companies to follow** Greylock's lead.



MARK OSTOW

Mobile Computing, page 55

Leadership deal lands Delta hot CIO

By Julia King

INFORMATION TECHNOLOGY troubleshooter Charlie Feld has signed on as chief information officer at Delta Air Lines, Inc. under a unique arrangement that enables him to simultaneously launch his own IT leadership center.

For the next two years, Feld, 55, will oversee the Atlanta-based carrier's 2,500-person information systems group, which operates as a subsidiary called Delta Technology, Inc.

In exchange, Feld said, he will receive a salary and benefits,

Delta, page 16

INSIDE THIS ISSUE

CAUGHT IN YEAR 2000 SQUEEZE
Study: Bug fix drains resources from other projects. Page 2

DEMO CASTS DOUBT ON MICROSOFT
Judge uninstalls browser, asks Redmond for answers. Page 6

Sun embraces Merced
Solaris port to 64-bit chip slated to ship in 1999. Page 14

NEWSPAPER

UP FRONT

Holiday cheer

Christmas comes, and don't you know it
My ritual is playing poet
Let's celebrate with lots of cheer
The folks who gave us news this year



The browser wars were all the rage
Two ways of viewing every page
Me, I'm choosing AOL
'Cause I just live for spam E-mail

Scott McNealy's shopping brings
Some platform-independent things
A Java VM in a box
And coal in Bill Gates' Christmas socks

Amazon will help you get
Your friends their books by Internet
But foes now say they really showed 'em
By changing name to Barnes & Modem

Here's some news, and brace yourselves
There's trouble hiring Santa's elves
The little guys put down their hammers
And took new jobs as C programmers

But don't you worry, Santa's finding
Salvation in data mining
To prep his list, his query would
"SELECT KIDS, STATUS = GOOD"

To hackers' named on your papyrus
Send a Christmas macro virus
Deck the firewalls with bows
And give them to the CIOs

On New Year's, raise a glass and say
A toast to coming Year 2K
Don't worry, things will be just fine
'Till 12/31/99

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE
BY RICH TENNANT



"You're not going to believe this, but I'm standing in front of a 14.4K chimney. I'll be here all night downloading this stuff."

E-mail Rich Tennant at the5wave@tiac.net

If wishes were horses

▸ *Survey: Few big companies have solid Y2K plans, but most believe systems will get fixed*

By Thomas Hoffman

HERE'S A leap of faith: Only 20% of America's biggest companies have devised a full-fledged strategy to deal with the year 2000 date-change problem. Yet 87% of those polled in a new survey of Fortune 500 companies expect to have more than half their systems fixed by the end of next year.

Poor planning for 2000 could cripple some businesses — for example, causing automobile assembly lines to shut down or stopping automated teller machines from spitting out money.

A lot of information systems executives held responsible for these systems are going to lose their jobs, predicted Rick Jerothe, director of PC/LANs at Staten Island (N.Y.) University Hospital.

"It's project planning by wishing," said Jim Woodward, senior vice president at Cap Gemini America, a New York-based consultancy with a year 2000 practice that sponsored the study conducted by Rubin Systems, Inc. in New York.

Woodward said year 2000 work is like an onion: "The more you peel back the layers, the more it makes you want to cry."

COST CRUNCH

The Cap Gemini study reveals other disturbing news about corporate progress with the millennium bug problem.

Eighty-two percent of companies admit they have underestimated the costs to fix the year 2000 problem.

Meanwhile, 95% of the companies polled said finding new staff to work on the problem has been "difficult or impossible."

The Cap Gemini study is the latest in a series of polls conducted on corporate preparedness for the year 2000 problem since March 1995. The most recent sampling reflects a poll of 108 IS directors and managers from companies that represent roughly one-seventh of the U.S. gross domestic product.

The results are among the first statistical evidence that year 2000-related costs are putting the kibosh on new development efforts and systems enhancements.

For example, the study found that the percentage of companies deferring new development work over the past eight months has increased from 11% to 18% [CW, March 31].

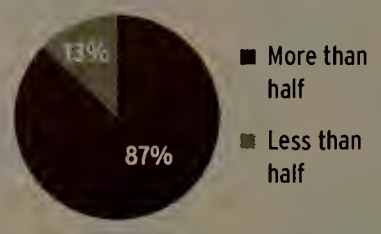
The percentage of firms choosing to defer enhancements to existing systems rose from 22% to 30% over the same period.

Those figures map with data from other research firms.

NOT MUCH PLANNING

Most firms say they will be year 2000-compliant ...

How many of your systems will be tested and compliant by Jan. 1, 1999?



... yet only one in five are prepared

Have you established a full-fledged strategy?



Base: 108 IS directors and managers

Source: Rubin Systems, Inc., New York, and Cap Gemini America, New York

Stephanie Moore, an analyst at Giga Information Group in Westport, Conn., estimated that 18% to 32% of existing information technology budgets will have to be reallocated in fiscal 1998 for year 2000 work.

WORK TO DO

"I have a two-year backlog on new application development projects I'd like to have my year 2000 staff free to work on," said Scott Waleski, director of IT and services at Yankee Energy Systems, Inc. in Meriden, Conn.

Waleski was quick to note that the projects being delayed are "nice-to-have systems — the critical stuff is still being done."

Yankee Energy's $2 million year 2000 budget is being drawn partly from its $8 million annual IS budget and a special reserve fund created for the effort. That has allowed the utility to stay on-track with installing new PeopleSoft, Inc. human resources and payroll software by next March under a project Waleski placed in "the low- to mid-six-figure range."

BACK BURNER

The less-critical projects that Yankee Energy has had to put on the back burner include adding reporting enhancements to its accounts payable and work order systems.

Major projects, such as those involving PeopleSoft or SAP America, Inc. implementations and Internet-based efforts "are practically unaffected" by year 2000 funding, said Lou Marcoccio, an analyst at Gartner Group, Inc. in Stamford, Conn.

But millennium conversion costs are eating into new in-house development efforts, such as sales force automation, order entry and logistics systems implementations, Marcoccio said.

Other organizations, such as Staten Island Hospital, have opted to outsource as much year 2000 work as possible to "minimize the workload" and free up their IS staffers to focus on other projects, Jerothe said. □



Web consortium gives HTML 4.0 its official blessing

▸ *Internet standard will make designing pages easier*

By Sharon Machlis

AFTER A FIVE-MONTH review process, the World Wide Web Consortium has finalized Hypertext Markup Language (HTML) 4.0 as an Internet standard.

Version 4.0 is aimed at making it easier for Web designers to build richer, more complex pages and to ensure that such pages look the same when they are accessed with different browsers. HTML 4.0 also offers new flexibility for supporting multiple languages.

"The new elements give designers increased control of the page," said Vic Powell, webmaster at the U.S. Department of Agriculture. HTML 4.0 will help Web pages "transform away from electronic versions of a printed page into their own style of information presentation," he said.

The new standard handles multilingual documents that use different characters and text direction.

Ian Jacobs, one of the editors of the new specification, said Microsoft Corp.'s Internet Explorer 4.0 and Netscape Communications Corp.'s Communicator already support several HTML 4.0 features.

Jacobs said he expects future versions will support the complete standard.

HTML 4.0 was designed to improve the look and functionality of Web pages, with features such as advanced forms and tables, in-line frames, and improved tables and style sheets. The new standard also handles multilingual documents that use different characters and text direction, and allows table and form text to be converted to Braille or speech for disabled Web surfers.

But some webmasters say they've been too busy to follow the impending specifications.

"Mostly I wait until a spec is forced on me in order to get my business done," said Mitchel Ahern, vice president of the Webmaster's Guild.

However, he said, the consortium's standards are generally sound. "I look forward to implementing the juicy bits," he said.

Information about HTML 4.0 is available at *www.w3.org/MarkUp/*. A Web consortium validation service, to check for HTML 4.0 compliance, is at *http://validator.w3.org/*. □

Tidings of leadership



MARC BERLOW

IF YOU WANT TO BE A TRUE LEADER, here's a holiday tip from author Noel Tichy: Teach others to be leaders. Tichy, who wrote ***The Leadership Engine: How Winning Companies Build Leaders at Every Level,*** says developing leaders requires ideas, values and a quality he rarely sees in IS: "edge."

Managing, page 58

JDK 1.2 features more tools, better security

By Sharon Gaudin

SUN MICROSYSTEMS, INC. late last week released the latest beta version of its Java Development Kit (JDK), which features Java Foundation Classes, enhanced security and more JavaBeans.

JDK 1.2, which is expected to be officially released next June, is available at Sun's World Wide Web site (*http://java.sun.com/jdc*) for free download and trial. The kit is a development environment for creating applications and mini-applications, or applets. It was slated to be commercially released in the first quarter next year.

"This release seems to be about more tools, better tools and a finer degree of control," said Frank Manci, network technical manager at Colonial Savings F.A. in Fort Worth, Texas.

"Looks like Sun is trying to do what Microsoft has been doing — offering one-stop shopping. You have your Java language, foundation classes, Web server. They're filling out the Java story [to] compete with Microsoft," Manci said. Key enhancements include permission management for security, the inclusion of Java Foundation Classes, two-dimensional and drag-and-drop capabilities and more JavaBeans.

When the commercial JDK 1.2 ships, it is slated to include Sun's upcoming HotSpot Virtual Machine, which is supposed to boost Java's often lagging speed up to a C++ equivalent.

A Sun spokesman last week said the company is delaying the official release of JDK 1.2 to give third-party developers a chance to upgrade their tools, debuggers and browsers so there isn't a long lag between the JDK release and widespread industry compliance. That lag caused a great deal of impatience with JDK 1.1.

MORE SECURITY

The security enhancements were designed to give developers more control over their applications and who has access to specific areas of the enterprise, said Gina Centoni, Java platform group manager at JavaSoft, the Java-focused arm of Sun.

"IS managers can give certain users access to specific areas of the system and other users different access," Centoni said. "It's critical that the security model allows for varying access so only a few employees have access to personnel reviews and salaries and others have access down to the metal."

"They've gone from a black-and-white security model to better control," Grimes said. "That will make it a lot easier to install applications. And sometimes the operator wants to download something and change their machine. This allows them to do that in a secure way." □

JAVA'S NEXT STEP

The beta version of Sun's Java Development Kit 1.2 includes:

- Permission management security
- Java Foundation Classes
- A 2-D architecture model
- Drag-and-drop capabilities
- More JavaBean components

Chase boosts CIO to No. 2

By Thomas Hoffman

AS PART OF a management shake-up at The Chase Manhattan Corp., CIO Denis O'Leary was elevated to the No. 2 spot in the New York-based bank's worldwide consumer operations.

He will serve on a new nine-member executive committee that will run the nation's largest bank.

BOARD CHANGES

O'Leary, 41, will report to Donald L. Boudreau, 57, formerly a vice chairman overseeing Chase's mortgage and credit-card lending operations and now responsible for the bank's worldwide consumer operations.

O'Leary will manage electronic banking, telephone call centers and other operations.

Also named to the executive committee was Joseph G. Sponholz, 54, who will run Chase's technology and processing businesses. He previously was the bank's chief administrative officer. Sponholz also was formerly chief financial officer and chief information officer at Chemical Banking Corp. and was credited, along with O'Leary, for smoothing the merger between the two banks last year.

A successor for O'Leary isn't expected to be named, a bank spokeswoman said. □

Corrections

A story in *Computerworld's* Internet Careers supplement [CW, Dec. 8] contained incorrect information on Cambridge Technology Group's Web development team. Mark Sifling is director of electronic commerce, Cambridge Management Consulting. Ben Taylor is responsible for business processes. Kipp Lynch didn't attend Xerox Parc, his mentor did. And Lee Dingle joined Cambridge Technology Group just over a year ago.

In the Dec. 1 issue, a photo of Bill Orvis from the Lawrence Livermore National Laboratory was incorrectly identified as Bill Oris of J. P. Morgan.



What could Rodney Dangerfield and the late Grace Hopper possibly have in common. Turn to our Quotes Quiz and find out. In Depth, page 68

In this issue

NEWS

10 **Customers fume** when customer service groups fail to get messages sent by E-mail, fax and voice.

12 **Lotus pushes** bug fixes and updates to users across the Web.

16 **Insurer improves** customer service with intranet, boosting competitiveness.

24 **Users want to** consolidate Unix servers, but weak partitioning and management present dangers.

OPINION

8 **Santa can't deliver** solutions to the biggest problems pressing IS; you'll have to do it yourself, Frank Hayes relays.

29 **Intel holds** the real reins of power within Wintel, Michael Schrage warns.

89 **Looking forward,** Dan Gillmor asks for more legal action; looking back, David Moschella sees '97 as Web's banner year.

TECHNICAL SECTIONS

CORPORATE STRATEGIES

33 **Utilities rush** to update decrepit customer information systems.

33 **Users rate** themselves low on preparation for outsourcing deals.

THE INTERNET

37 **Airline scurries** to Web to keep up with rivals selling tickets online.

37 **Web proves** an effective way to deal with deregulation for gas utility.

37 **Charities flock** to the Web for donations and recruitment.

THE ENTERPRISE NETWORK

41 **Automatic dialing doubles** productivity of airline customer service operators.

41 **Novell ties** workflow to E-mail in new GroupWise add-on.

41 **Stocking stuffers abound** on the Web for specific network management problems.

SOFTWARE

51 **Cranberry grower** locates an advantage using GIS location system.

51 **Microsoft embraces** HTML in Office, aims at Windows 3.1 installed base.

52 **Users turn** to third-party tools to tame herd of enterprise planning applications.

SERVERS & PCs

53 **Software makes** storage more flexible, speeding recovery and conversion projects.

53 **Chip maker doubles** capacity of linear tape drives.

53 **Notebook users refuse** upgrades, snubbing new models despite faster chips, bells and whistles.

MOBILE COMPUTING

55 **Backups move** to the Internet as mobile workers seek to secure data from the road.

55 **Laptop leasing** hits big as users try to avoid the hassle of used system disposal.

55 **Review:** Windows CE machines improve with new version of operating system.

FEATURES

MANAGING

58 **Leaders must develop** leadership skills on their own if they want to get ahead.

BUYER'S GUIDE

62 **Cool stuff.** We check out the latest gizmos, gadgets and games.

IT CAREERS

71 **Child's play can help** unlock the creativity of your IS staff.

ETC.

Company index ____ 87
Editorial/Letters ____ 28
F.Y.I. ____ 61
How to contact CW ____ 87
Inside Lines ____ 90
Resources for IS Managers ____ 60
Stock Ticker ____ 104

Laptop users steer clear of Windows NT

▸ *Key issues: Battery life and lack of drivers*

By Kim Girard

On laptops, NT 4.0 lacks:

- Power management features
- Adequate battery life
- Support for some audio and video drivers
- Plug and Play

TO MANY laptop users, NT still means "not totable."

"To anyone who travels, I would not recommend [Windows NT]," said Tom Tracey, systems officer at PNC Bank Corp. in Pittsburgh.

Tracey recently upgraded his IBM ThinkPad 760 to 65M bytes of RAM so he could install the Windows NT 4.0 operating system. But with NT, "you don't get a warning when your system [battery] goes down. Just a black screen," he said.

To date, only 5% of corporate users have committed to using NT on notebooks, according to Gartner Group, Inc., a Stamford, Conn.-based consultancy.

"I think there was an initial rush to go with NT," said Ken Dulaney, an analyst at Gartner. "But NT was never designed to support notebooks."

Indeed, Microsoft Corp.'s Windows NT 4.0 on notebook PCs lacks the power management features, such as battery-life warnings, that users enjoyed with Windows 95. NT 4.0 also lacks the Plug-and-Play features, such as modem recognition, and the audio and video drivers of Windows 95.

To get those capabilities, users must buy and install third-party utilities when available.

"I think there was an initial rush to go with NT. But NT was never designed to support notebooks." – Ken Dulaney, Gartner Group

Many users have been disappointed by some inconsistent notebook vendor support for NT 4.0 and aren't convinced it has the extra data security Microsoft promised.

"Many of the security features [of NT] have already been broken by people who do that for a living," Dulaney said.

Microsoft officials in Redmond, Wash., have said laptop-friendly power management and Plug-and-Play capabilities will be added in NT 5.0, which is due in 1999.

And forecasters say Windows NT will capture 30% of the laptop market by 2001 as companies upgrade laptop processors and memory to adopt NT 5.0.

"NT is the future," said Robert Ward, technical director at Pacific Bell Corp. in San Francisco. But Ward, like other users, said his unit is holding back on installing NT. He said he is worried about bugs in the operating system and users' experience with corrupted hard drives.

"I want it to stabilize," Ward said.

OUT OF THE MAINSTREAM

Mark Bolz, a systems consultant at PNC Bank, said about a dozen notebook users — all in the bank's information services department — are using NT on Dell Computer Corp. and IBM notebooks for database and niche applications.

Bolz said shorter battery life is the biggest problem because NT drains the battery faster than Windows 95.

Furthermore, he said, the promise of better security isn't enough to get users to upgrade to NT. "Most people won't use NT," Bolz said. "Security is not a deciding factor."

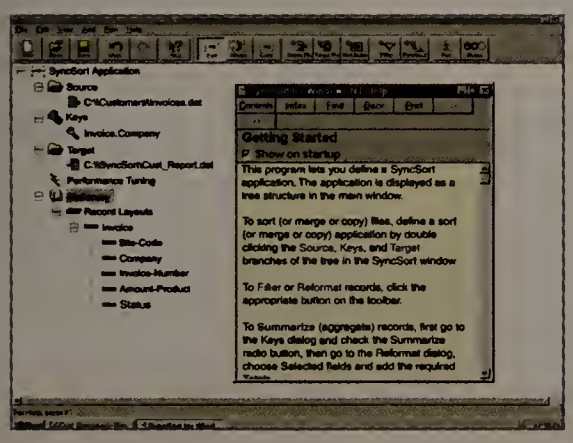
But Jerry Mishork, director of information systems at Synon Corp., a software application development company in Larkspur, Calif., said the company is considering future installation of NT on developers' machines to enhance security. He said the company will beta-test NT 5.0 soon.

"I don't want to be the first person on the block to have it running," he said. "We'll find out the horror stories and go from there." □



Fast and Friendly

Now the world's fastest sort technology has the friendly face of Windows NT®.



Introducing **SyncSort for Windows NT**, the high-performance tool you'll need to load your database faster and do all kinds of heavy-duty processing, such as data warehousing chores, more easily and efficiently on Windows NT. Designed specifically for a client/server environment, SyncSort for Windows NT lets you build applications quickly on client machines while running the actual jobs behind the scenes on your more powerful NT server. The result is optimal SyncSort performance that's light years faster than the Windows NT systems sort. Interested? Just give us a call at (201) 930-8200, dept. C7CWW. We'd also be happy to send you a free copy of our newest publication, *Power Database Loads: A Checklist of Techniques*.

syncsort

Tel. (201) 930-8200, dept. C7CWW
Fax (201) 930-8290, dept. C7CWW
http://www.syncsort.com/c7cww

©1998 SyncSort Incorporated. All trademarks are property of their respective owners.

Uninstall demo raises Microsoft doubts

By Carol Sliwa and Gary Anthes
WASHINGTON

AFTER SEEING A demonstration that performed otherwise, a federal judge last Friday cast doubt on Microsoft Corp.'s assertion that it isn't feasible to uncouple its Internet browser from the latest versions of its Windows operating system.

U.S. District Judge Thomas Penfield Jackson had issued a preliminary injunction here on Dec. 11, ordering Microsoft to stop requiring PC makers to bundle its Internet Explorer browser with Windows.

To comply with the order, Microsoft had offered a two-pronged option to PC makers: ship a 2½-year-old operating system without the Internet Explorer browser or license a version of Windows 95 without the Explorer files, which would render Windows inoperable.

But those options were rejected by many users and analysts, as well as the Justice Department, as unacceptable or unsupportable.

"Clearly, no one would offer what Microsoft is saying would be an alternative," scoffed Daniel Hanson, director of the Greater Cleveland (Ohio) PC User Group, Inc., which has about 1,200 members. "If I were Compaq or one of the OEMs, I sure wouldn't want to offer that to my customers."

"They've taken the easiest way out," said Rick Waugh, a senior systems analyst at BC Telecom, Inc. in Vancouver, British Columbia. "They've caused the least grief for themselves and put the onus back on the PC manufacturers."

Amid waves of scorn and following a new complaint filed by Justice, the warring factions went back to court last Friday.

Jackson's doubts arose after a demonstration last Thursday of the standard "uninstallation" utility, which ran on the latest versions of Windows 95 and Explorer and which removed the World Wide Web browser in less than 90 seconds.

Describing every icon, mouse click and system message, the judge said that upon completion of the process, "to all appearances, Windows 95 functioned flawlessly as intended."

IS SEEING BELIEVING?

As a result, the judge ordered Microsoft and the Justice Department, which is pursuing the company on antitrust grounds, to appear before him Jan. 13 to answer the question, Is the uninstallation process that simple? At the end of the hearing, he said, "I want to know if I can believe my eyes."

Although neither of the warring parties had much to say after the hearing, government officials clearly saw the judge's description of the uninstallation demonstration as a sign that the burden of proof in the dispute now lies with Microsoft.

Jackson also will hear arguments at the same time on claims made by the Justice Department last week that Microsoft has violated the Dec. 11 injunction [CW, Dec. 15] and should be fined $1 million per day for contempt.

In its civil contempt complaint, the department asked that Microsoft be required to offer PC makers the option of licensing its most current version of Windows 95 with the Internet icon and Internet browser removed, similar to what would result if a user activated the uninstall utility. It also wants the company ordered to allow the government to review specifications for new operating system and browser releases 30 days before commercial release.

Despite the outrage at the Justice Department, PC suppliers seem content to bundle the two products, claiming that users want it. Many users, meanwhile, appear not to care whether the browser is bundled.

Brad Smith, Microsoft's associate general counsel, complained that the government had changed its mind, saying on Dec. 11 that Microsoft must remove all traces of Explorer from Windows and now saying that it is OK to leave some of it installed. He said Windows has 14 million lines of code, seven times as much as the Federal Aviation Administration has in its air traffic control systems, and "you can't slice and dice that with a legal meat cleaver."

In a separate action, Microsoft appealed the court's preliminary injunction to an appellate court, claiming that the judge erred on several counts and that his ruling would set a dangerous precedent, letting the government interfere in product design. □

Senior writer April Jacobs contributed to this story.


ERIC MILLETTE

Greater Cleveland (Ohio) PC User Group's Daniel Hanson: "Clearly, no one would offer what Microsoft is saying would be an alternative"

Windows 98 impact unclear

When it comes to stripping Internet Explorer from Microsoft's operating systems, Windows 98 could present more difficulties. The judge's order applies to "any successor version" of Windows 95.

"I suspect there are changes they could make in the current shipping version of Windows 95 to separate Internet Explorer out, but I don't think they're going to be able to do that with Windows 98," said Sandy Sully, chief information officer at Xilinx, Inc. in San Jose, Calif.

For its part, Microsoft said it is moving full steam ahead with Windows 98 as planned — with Internet Explorer included. The new operating system is due in the second quarter. Company officials said they have no plans to change the design and claim that any court order would apply only to licensing issues.

"If they have to strip [Explorer] out of Windows 98, it will represent a big challenge for Microsoft," said Mike Gartenberg, an analyst at Gartner Group, Inc. in Stamford, Conn. — Carol Sliwa

Real-time customer support chat coming soon to a Web site near you

By Sharon Machlis

SEVERAL MAJOR companies plan to roll out chat-based customer support on their World Wide Web sites next quarter, letting users type questions and get answers from support staff in real time.

The idea is to bring telephone-like immediacy and personal contact to the Web.

"You've got to keep moving forward and find ways to give your customer a new experience [online]," said Bill Karsh, president and CEO of National Discount Brokers (NDB) in New York, which expects to start testing a custom-designed chat product within the next 30 days.

Although less expensive than conventional call centers, such systems are more costly than conventional Web retailing, in which consumers typically must answer their own questions by surfing through a site.

"One of the problems with [chat-based customer support] is it's very expensive," said Erica Rugullies, an analyst at Giga Information Group in Cambridge, Mass. "I don't think it will be widely adopted."

But Karsh sees chat as a tool that will help build customer loyalty by offering users personal guidance to find data they want on the NDB Web site. With so many players in the discount electronic-brokerage business, Karsh said, it is important for a company to differentiate itself.

"How do I lock up that [customer] relationship?" he asked. "Today, the cost of switching is not very high."

Symantec Corp. plans to offer chat-based support in February for Norton AntiVirus, according to Michael Gelardi, senior product specialist at the company's Eugene, Ore., office. There will be an as-yet-undetermined charge for using the service, which is expected to include all of Symantec's software lines.

The Cupertino, Calif.-based company uses software from Business Evolution, Inc. in Princeton, N.J., that features one-to-one chat technology able to split a browser screen. On one part, the customer and service representative conduct a real-time online typing session; on the other, the representative can "push" information from a Web page or Lotus Notes document.

Du Pont Co. is starting to deploy software from Business Evolution internally to hold virtual meetings among employees at different locations.

After the internal tests, Du Pont expects to experiment with chat customer support on one of its consumer Web sites, such as that for stain-resistant carpet.

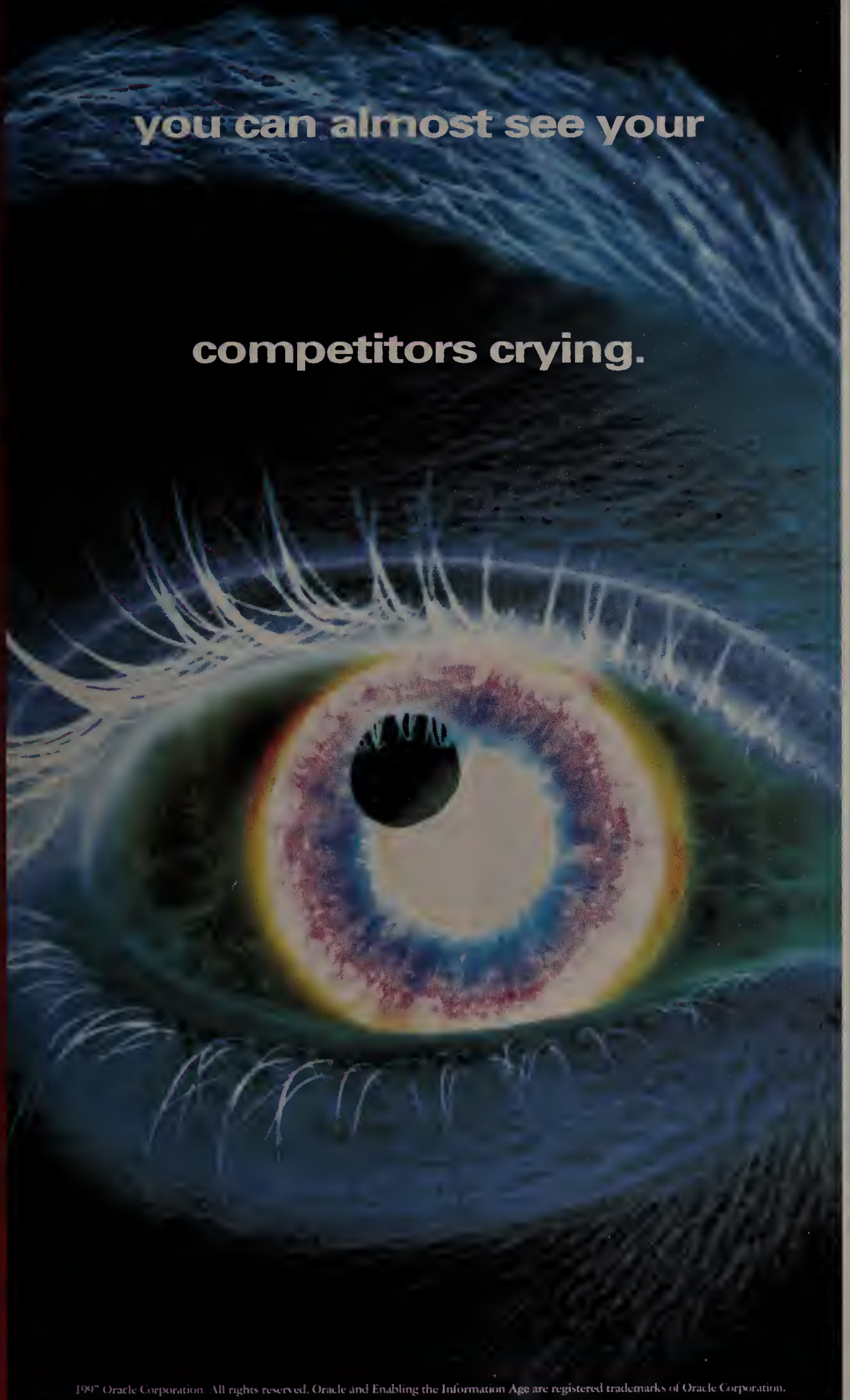
"There is a straight-to-the-bottom-line savings if we are not picking up a charge for a 1-800 call," said Robert Ford, global information technology leader for Du Pont external affairs in Wilmington, Del. And, he said, "it's much richer content than when you're working your way through an automated telephone system."

But Kate Doyle, an analyst at Jupiter Communications, Inc. in New York, said IBM's recent partnering with Business Evolution is a significant move for the market. "It's really heating up a lot," she said. "I think there will be more experiments with chat in '98." □

If you look closely,

you can almost see your

competitors crying.



Introducing Network Computing from Oracle.

Once your company begins the transformation to network computing, things will never be the same—for you or your competition. For starters, network computing costs are 39% less than a desktop computing environment. In addition to being able to use all of your existing hardware, you'll reduce costs when it comes to network maintenance, software upgrades and technical support. With network computing, the critical information your company needs is dependable, accessible, accurate. Always. All applications and data are stored on a professionally managed network, so you install software one time to get started; everyone is upgraded and updated instantly. Leaving you the opportunity to respond rapidly and intelligently to change. To implement new business procedures from one central location. To expand your reach into markets and distribution channels you never had time to consider before. Network computing. It is real. It is available. It is remarkable. It is time.

Find out more. Visit ***nc.oracle.com*** *or call* ***1-800-633-0821, ext. 12352*** *for a free brochure.*

ORACLE®

Enabling the Information Age®

1997 Oracle Corporation. All rights reserved. Oracle and Enabling the Information Age are registered trademarks of Oracle Corporation.

FRANKLY SPEAKING

Memo from St. Nick

FRANK HAYES

DEAR IS MANAGER:
Sorry for the form letter, but it's busy up here at the North Pole.

I'm still back-ordered on Tickle Me Elmo dolls and Nintendo 64, and now I can't tell how many Giga-Pets and American Girl dolls we've got. This new inventory system is no replacement for a dozen elves with quill pens.



But Santa's bad news for all you good little IS managers is that I won't be able to deliver on all your requests this year. Everybody's asking for the same things, and I can't even find a source for half this stuff, much less put it under your tree.

I'm not saying you'll get a lump of coal — I'm just trying to manage expectations. So here are the items that seem to be on everyone's wish list:

A year 2000 fix you can put in place by the end of 1998. Ho, ho, ho. If I could cure the millennium bug, I'd be a big-bucks consultant, not climbing down chimneys for a living.

But what you really need now is to concentrate on the year 2000 projects that still have a prayer of making the deadline and cut out the ones that don't. So for all that cutting, this year it's Ginsu knives for everyone!

All you good little IS managers are asking for the same things this year.

Web protection — from hackers, overloaded systems and the collapse of the Internet itself. No can do. That kind of safety doesn't exist on the wild frontier of the 'net.

But I've got a warehouse full of Roy Rogers six-shooters. If it makes you feel any better to be packin' a pair of cap pistols, pardner, they're all yours.

All the employees IS needs — at affordable salaries. Been sniffing laser-printer toner again, haven't you?

Look, your days of easy staffing are gone, gone, gone. From now on, your new hires will likely be pricey and pampered.

But in case you want to experiment, I'll throw in a Do-It-Yourself Cloning Kit as a stocking stuffer. Hey, if it works for sheep, why not for Cobol, Java and Visual Basic programmers?

Vendors who cooperate with one another and with their customers. I'm a jolly old elf, not a miracle worker.

Tell you what, though — how about a pair of ringside tickets to a street fight between Mike Tyson and Latrell Sprewell? If all your vendors followed the example of these two gentle souls ... well, come to think of it, that *is* the example they follow.

New golf clubs. This we can do.

Better lines of communication with users. You want lines of communication? Here, have a cell phone. Take five or six — they're small. I got millions of these things, 'cause everybody's giving them away.

See, *having* lines of communication is cheap. Where it gets costly is actually *using* 'em. You're going to have to pay your own phone bill — and you'll have to pick up the tab if you want to keep talking with your users, too.

A clear return on every IS investment. Yeah, right. My accountant Mort fell off his chair laughing at this one. Mort can make any project show a loss — and so can your critics, if all you depend on is numbers. You need political leverage, bub.

So here's a box of cheap cigars. Add a nice bow and a card with your loudest critic's name on it, and *voila!* A New Year's present for the boss. Sure, it's sleazy sabotage, but that's what those critics are trying to do to you, right?

Less stress, fewer projects that fail and enough breathing room to make plans. Whaddaya want, early retirement? All that's left in Santa's sack is running shoes — and you'll need 'em.

A year-end close that runs clean. OK, just this once. But treasure the simple pleasure of no Abends. Once you put your year 2000 fixes into production, it may be the last trouble-free close you have for a while.

Season's greetings,
Santa

Hayes is Computerworld*'s West Coast bureau chief. His Internet address is frank_hayes@cw.com.*

SHORTS

Clinton signs E-copyright law

President Clinton signed into law a measure that makes it illegal to possess or distribute multiple copies of online copyrighted material for profit or otherwise. A person willfully infringing on copyrighted material worth more than $1,000 could be prosecuted under the No Electronic Theft Act. Scientists had urged a Clinton veto, arguing the law could stunt the free flow of information on the Internet. But software makers and musicians said it would prevent widespread pirating.

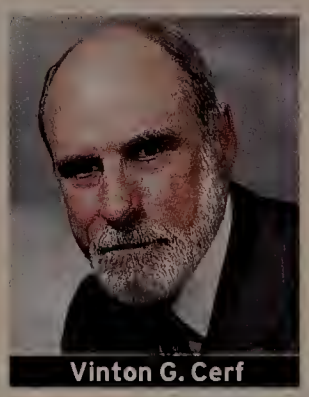
IBM/StorageTek deal OK'd

The Department of Justice approved the 1996 mainframe disk system OEM agreement between IBM and Storage Technology Corp. in Louisville, Colo., after an 18-month investigation. The deal, which was slated to expire in 1999, made IBM the sole marketer and seller of StorageTek's mainframe disk technology. The two companies celebrated the decision by extending their contract agreement through 2000. The move allows continued joint development of the Ramac Virtual Array. The Justice Department was investigating whether the deal would hurt competition in the high-end storage market.

AOL wins spam settlement

America Online, Inc. won a battle with Over the Air Equipment, Inc. in Las Vegas over the company's sending unsolicited electronic mail to AOL subscribers. Over the Air Equipment agreed to stop sending the messages advertising sex-oriented World Wide Web sites and to pay damages, according to AOL, but neither company would discuss the payment figure. AOL said it also has sued Squeaky Clean Marketing and Cyber Services, both in Dallas, Ga., for spamming its members.

Internet innovators honored



Vinton G. Cerf

Internet pioneers Vinton G. Cerf and Robert E. Kahn last week received the National Medal of Technology from President Clinton for their development of the protocol that gave rise to the Internet. Cerf, a vice president at MCI Communications Corp. in Washington, and Kahn, president of the National Corporation for Research Initiatives in Reston, Va., worked on TCP/IP.

Voluntary ban on personal data

The Federal Trade Commission has endorsed a self-regulatory, rather than legislative, approach to governing the availability of personal information online. The commission's report said that many major companies engaged in online dissemination of personal information — so-called lookup services such as Lexis-Nexis — have agreed to adhere to voluntary restrictions on making personal information available. The restrictions would keep Social Security numbers, unlisted telephone numbers and credit histories out of the general public's view.

Netscape: Just trying to help

Netscape Communications Corp. today is slated to provide information to Windows 95 users to make Navigator their default Web browser. The offer comes as a federal judge, acting on a Department of Justice complaint, ordered Microsoft Corp. to stop integrating its Internet Explorer browser with Windows 95 — for now, at least. Buttons on Netscape's Web site will instruct users how to make Netscape's Navigator their browser, how to deactivate Internet Explorer as the default browser and how to uninstall Internet Explorer.

Holiday rush hits E-mail carrier

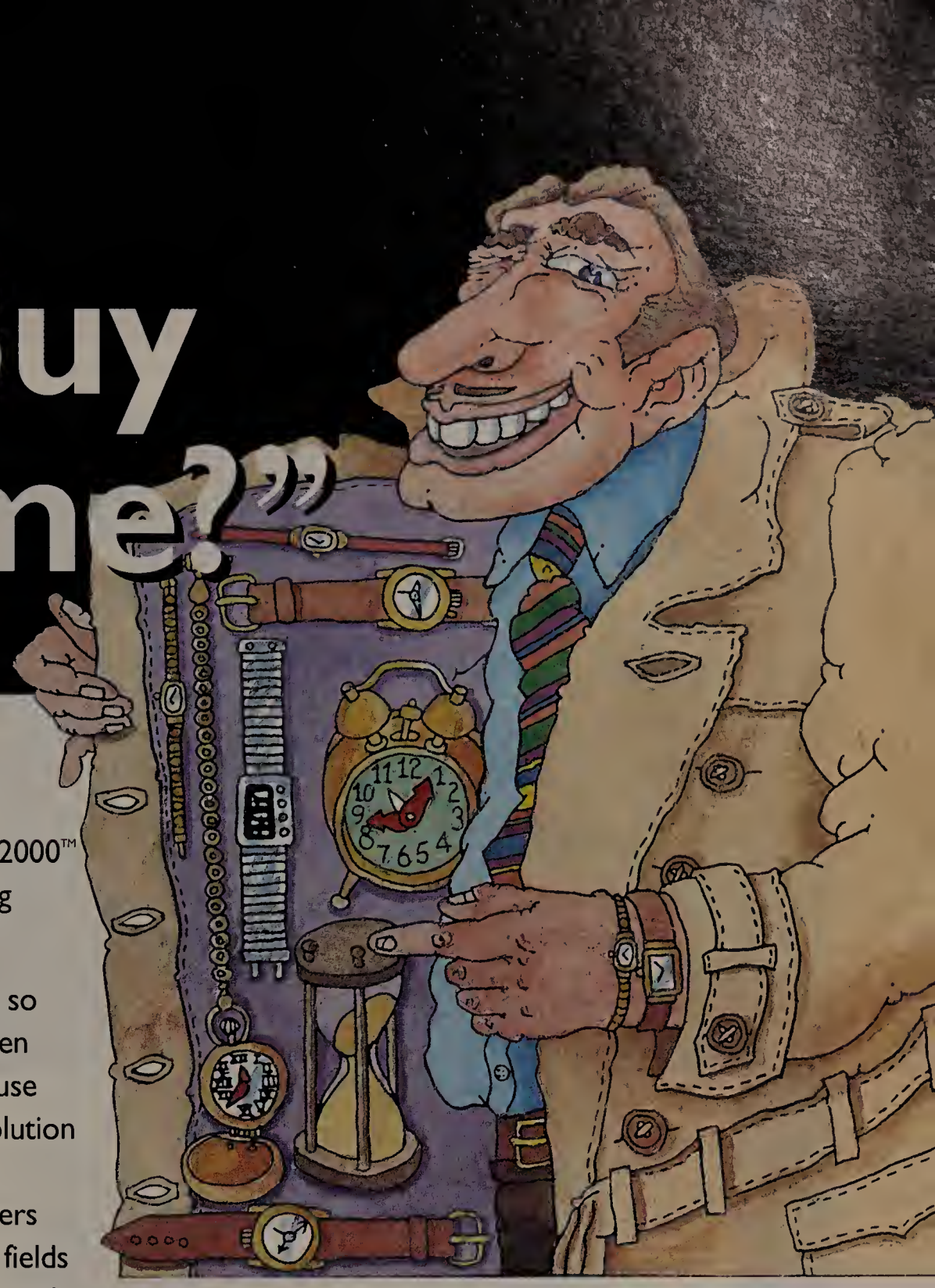
AT&T WorldNet was the latest major Internet service provider to run into an electronic-mail bottleneck, which it attributed to the Christmas holiday rush. A surge in volume last week caused delays in receiving E-mail, though members could send mail, the firm said.

EDS inks deal with IBM

Electronic Data Systems Corp. in Plano, Texas, has entered into a five-year software licensing deal with IBM for $1 billion worth of mainframe, DB2 database, Lotus Notes, Tivoli and other software. The contract has the potential to generate $1.5 billion in revenue for IBM.

SHORT TAKES IBM subsidiary **Tivoli Systems, Inc.**, said it would seek to acquire **Software Artistry, Inc.**, an Indianapolis-based help desk software maker. The deal, valued at $200 million, would be the latest in a series of moves designed to make the TME 10 enterprise management framework into a suite. ... **AT&T Corp.** CEO C. Michael Armstrong told financial analysts in New York he would unveil a business strategy next month, including ways to provide local phone service. He also froze hiring and set compensation guidelines. ... Collaborating with the National Football League and NBC Sports, **IBM** will host the official Web site for Super Bowl XXXII to be held Jan. 25.

"Psst... Wanna Buy Some Time?"



You Need SoftFactory/2000

There's more than one way to buy time – but you gotta know the secret. Word on the street is that SoftFactory/2000™ with SmartFind/2000™ is the only way to go if you are going to get your Y2K projects completed quickly.

TECHNOLOGY

MANPOWER

The SoftFactory/2000 solution is technology-based, requiring less manpower compared to other approaches which are primarily manpower-driven supported by a little technology.

SoftFactory/2000 is so fast and so accurate, it's like buying time between now and the year 2000. That's because SoftFactory/2000 is the only Y2K solution which uses SmartFind, an intelligent problem-solving technology that filters your code to identify only true date fields and only the date occurrences that need to be fixed.

Compare that to other approaches which rely primarily on slow and expensive manpower...assuming you can find qualified people in the first place.

Time is running short, but we can get you to compliance before the year 2000. Call us at 1-800-632-6265 today.

Download the SoftFactory/2000 White Paper from www.microfocus.com/year2000.

BEST OF BYTE PC EXPO '97

Finalist

MICRO FOCUS®

Transforming The Enterprise

© Micro Focus 1997. All rights reserved.
The Micro Focus logo, SoftFactory/2000 and SmartFind/2000 are trademarks and Micro Focus is a registered trademark of Micro Focus Limited.
All other trademarks are property of their respective companies.

Call centers call for help tracking messages

By Matt Hamblen

THE CUSTOMER may be king, but some companies' customer service systems unintentionally treat customers like mud.

With customers expressing themselves by telephone, fax, electronic mail and the World Wide Web, tracking and responding to all those messages "is definitely an emerging problem for organizations," said Carter J. Lusher, an analyst at Gartner Group, Inc. in San Jose, Calif.

"With so many pipes into an organization, the response just isn't working. And companies can't manage it and provide consistent levels of customer service," he said.

Finding a solution will be a major concern of large companies in coming years, according to analysts and network managers. There are 200 vendors in the field, and the $277 million market should quintuple in five years, Lusher said.

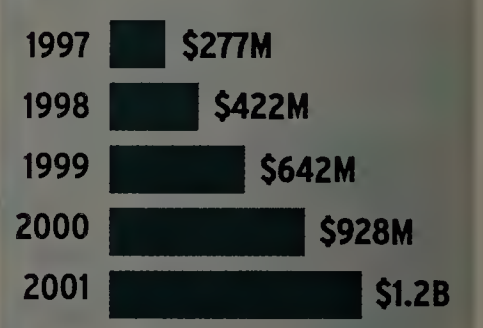
Mike Davis, senior manager of customer systems engineering at Paging Network, Inc. (PageNet) in Plano, Texas, agreed that there are increasing demands for call centers as they become the focal point for all customer contacts. PageNet is embarking on a one-year study of its customer response system needs. "Our goal is a happier customer and to support outbound selling," he said.

MCI Systemhouse in Washington and Fleet Bank Corp. in Boston recently upgraded their call centers.

Carlson Wagonlit Travel in Fort Lauderdale, Fla., is also undergoing an upgrade, due to be finished next September, to assist 15,000 travel agents worldwide. By making customer histories available more quickly to agents, the company expects to cut in half the number of keystrokes made by agents while taking reservations, said Dick Smith, senior vice president of information technology.

MORE SUPPORT

Projected global market for customer service and support applications



Note: 80% of the existing market is in the U.S.

Source: Gartner Group, Inc., Palo Alto, Calif.

PageNet's national call center in Texas handles thousands of calls each day with 300 agents who manage questions from major carriers such as MCI Communications, Inc. — as well as millions of consumer pager customers' calls.

Earlier this year, PageNet began work with Chordiant Software, Inc. in Palo Alto, Calif., to implement Chordiant's Customer Communications Solution in a portion of its call center. Carlson Wagonlit Travel also is a Chordiant user.

Chordiant recently released Version 1.4 of the software package, which, either through Windows NT or an enterprise-class JavaBeans platform, allows multiple customer interactions. That way, a customer service agent on a phone call can access recent E-mail and the customer's profile from a database.

Software vendors such as Chordiant have "huge potential" for growth as the call center becomes more of a "customer interaction center," said analyst Elizabeth Ussher at Meta Group, Inc. in Reston, Va.

Analysts said Chordiant brings all the customer contacts to a front-end customer service agent. It is the only vendor so far to integrate systems in a packaged way at the back end, analysts said. □

& Utilities turn up customer service in deregulated market. Page 33

How is it that tiny magnetic particles can be powerful enough to attract an entire industry?



The magnetic particles in our ATOMM technology are only 0.1 micron thin, but that doesn't mean their pull on the storage industry isn't felt far and wide. In fact, Iomega's Zip™ drive and Quantum's DLT™ 4000 and 7000 tape drives were designed specifically to take advantage of it.

ATOMM (Advanced super Thin-layer and high-Output Metal Media) is a unique dual-coating system we developed that gives our storage products superior capacities, faster transfer rates and greater reliability. Take our new HiFD™ floppy disk. It's the same size as a regular floppy disk, but it stores 200 MB and still delivers a 3.6 MB/sec transfer rate. That's the type of improvement we're talking about. You'll find similar advances in our other products.

Our super thin-layer ATOMM technology led to some of today's most popular drives.



HiFD disk



Zip disk



DLTtape™ IV


DDS-3 125M 4mm Cartridge

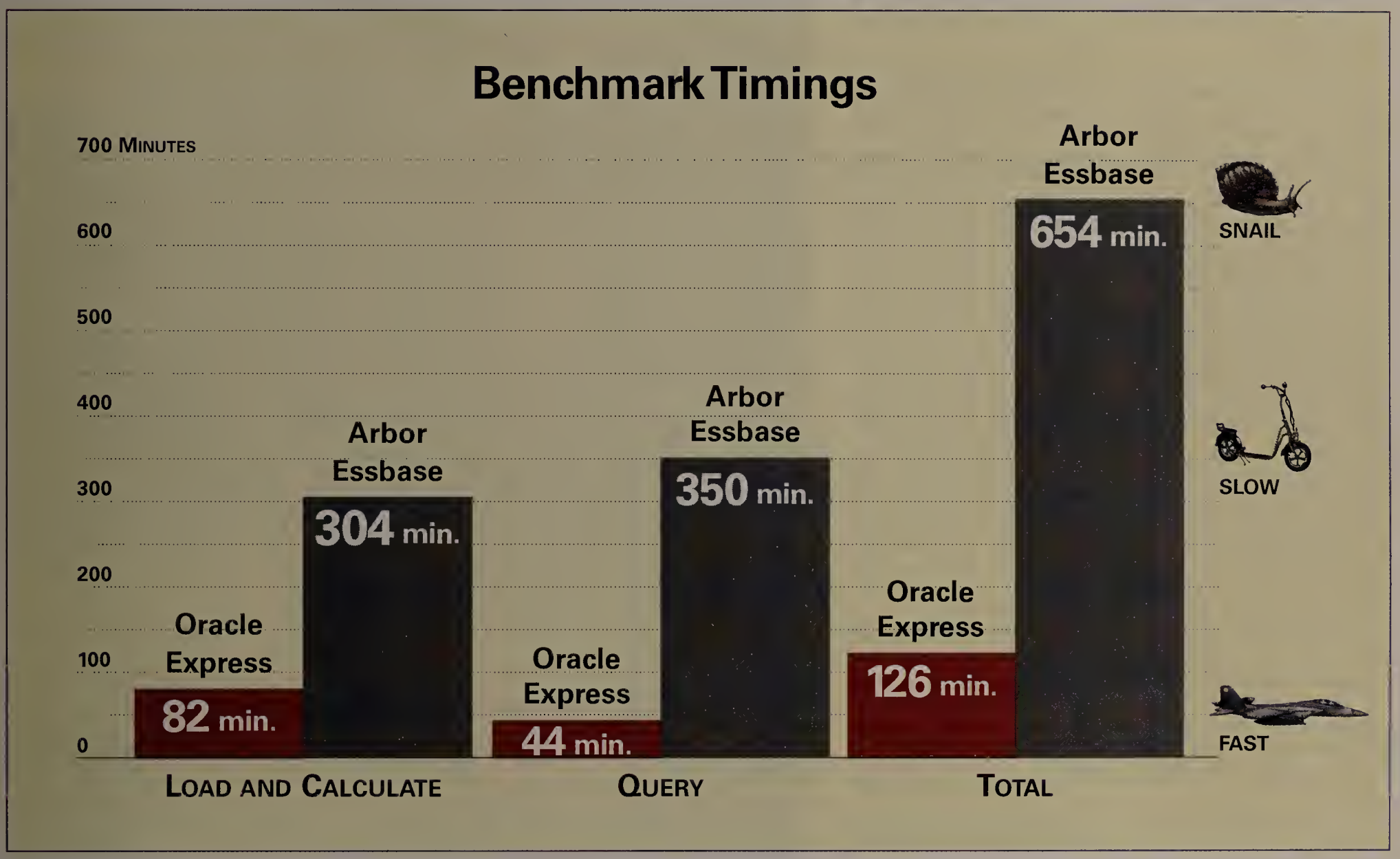
Our DLTtape™ IV offers an ATOMM driven 70 GB capacity. If you want another example of ATOMM's strength try our 125 meter 4mm cartridges. After all, they offer triple the capacity of previous cartridges. If there's any doubt left about what a difference ATOMM can make, just consider our Zip disks — the first product to utilize the technology. They were able to change the way whole industries store data. So don't let the tiny particles fool you. If there's one thing ATOMM technology backs up best, it's the theory that good things come in small packages. For more information, call 1-800-488-FUJI or visit our Web site at www.fujifilm.com.

FUJIFILM COMPUTER PRODUCTS
WHERE THE FUTURE'S STORED.

©1997 Fuji Photo Film U.S.A., Inc. Zip is a trademark of Iomega Corporation. DLT and DLTtape are licensed trademarks of Quantum Corporation. Where the future's stored is a trademark of Fuji Photo Film U.S.A., Inc. HiFD is a trademark.

Oracle Express
5 Times Faster Than Arbor Essbase

Always the most analytic power, now objectively the fastest — 5 times faster than Arbor Essbase.



Oracle® Express® Server performed the Industry Standard OLAP Council APB-1 benchmark over 5 times faster than Arbor Essbase on identical hardware*. Oracle Express Server slaughtered Arbor Essbase in both load and calculation times and query times. In addition, Express required less than one third the disk space of Arbor's Essbase. So, if you're in a hurry for more answers, **call Oracle today at 1-800-633-1071, ext. 12323** or download a summary of the results from our Website at **http://www.oracle.com/olap/** Or, if you've got time on your hands, call Arbor.

ORACLE®

Enabling the Information Age™

©1997 Oracle Corporation. All rights reserved. Oracle is a registered trademark and Oracle Express and Enabling the Information Age are trademarks of Oracle Corporation. All other company and product names are used for identification purposes only, and may be trademarks of their respective owners. *OLAP Council APB-1 June 1996.

CA snaps up AI developer

Computer Associates International, Inc. last week acquired a small developer of neural networks and other artificial intelligence software.

Islandia, N.Y.-based CA bought privately held AI Ware, Inc. in Beachwood, Ohio, for an undisclosed sum. It plans to incorporate AI Ware's cutting-edge analysis technology into its products.

Neural network software evaluates sample cause-and-effect data to recognize patterns and project possible outcomes. It "learns" on its own so programmers don't have to build models, and it frees human decision-makers from overwhelming analysis.

The deal promises help for users of CA's Unicenter TNG (The Next Generation) enterprise management suite who need to predict problems in client/server applications and not just report problems after the fact, said Larry McDermott, manager of remote server management at Shared Medical Systems Corp. in Malvern, Pa.

Neural network technology will be difficult to build in to existing products such as Unicenter TNG or the Jasmine multimedia database, according to Dave Kelly, an analyst at Hurwitz Group, Inc. in Framingham, Mass. So in the short term, CA probably will implement AI Ware software as add-on services, he said.

— Patrick Dryden

Lotus uses Web to help trap bugs

▸ *Push service will target, notify users of bug fixes and technical patches*

By Barb Cole-Gomolski

LOTUS DEVELOPMENT CORP. is beta-testing a service it will use to push bug fixes and other technical patches to users via the World Wide Web.

Users applauded the proactive approach, saying that getting updates automatically might prevent downtime and help them better plan for upgrades.

The push service could also result in savings for companies that pay for support on a per-incident basis, said Dennis White, technical support analyst at Thomas & Betts, an automotive parts manufacturer in Clinton Township, Mich., that uses Lotus Notes. "It sounds like we could avoid making some of those technical support calls," he said.

The free service, to be rolled out in the first half of next year, initially will be incorporated in Lotus' enterprise-level support package, which costs $199,000 per year. Down the road, the service will be rolled out at no extra charge to customers who subscribe to the less costly Passport support plan, Lotus officials said.

TARGETING USERS

Customers can already download software fixes from the Web and ask questions in Web-based discussion groups. However, Lotus' push service will identify customers who may encounter a particular problem based on their environment. The vendor will automatically deliver information, alerts and bug fixes to personal Web pages set up for each customer.

HOW PUSH SUPPORT WORKS

1. Each enterprise support customer is given a personal Web page
2. When a bug fix or patch is issued, Lotus determines if an enterprise customer could benefit from the fix
3. Applicable fixes are automatically pushed to the customer's personal Web page

"It's a great idea," said Dennis Murray, head of corporate technologies for the clinical development and regulatory affairs division at Novartis Pharmaceuticals Corp. in East Hanover, N.J. The company will roll out 25,000 Notes seats by the end of next year.

Instead of having to react to bugs and glitches, companies could be alerted to problems before they crop up, Murray noted. The service also could help sites plan better for upgrades by indicating which fixes pertain to them. In addition, it could help sites make better use of their information systems resources by avoiding unnecessary upgrades and fixes.

"Frequently, when a software company does a bug fix, customers really don't know if it applies to them," said David Marshak, an analyst at Patricia Seybold Group in Boston.

The service could also take some pressure off Cambridge, Mass.-based Lotus, which saw its technical support calls double to almost 2 million last year as the number of Notes seats hit nearly 18 million, according to Jim Krzywicki, vice president of worldwide customer support and education at Lotus. "Our focus for 1998 is to shift to prevention," he said.

But not all users think the push plan is a panacea.

"It presupposes that somewhere in Lotus or IBM, they have an accurate profile for your company," said Steve Haggerty, a consultant at Ernst & Young LLP in Los Angeles, which has more than 40,000 Notes seats.

Haggerty said it would be better for users if Lotus would make more technical information available on its Web site in a searchable format.

Lotus offers such a service through its Knowledgebase online offering, but Haggerty said it can take a while before fixes to reported problems show up there. □

Room for improvement

Has Lotus support really improved? It depends on whom you ask.

"I have seen improvements in terms of the time it takes to get through and in terms of the answers they have," said Steve Haggerty, a consultant at Ernst & Young.

But for Edward Haston, assistant vice president and manager of support at Johnson & Higgins in New York, "the improvement [in support] has been minimal." He said that although it has become easier to get a live person on the line, Lotus support personnel often "just don't have the answers."

An IS manager at SmithKline Beecham Consumer Health Care in Crafton, Pa., said she has noticed that "the quality of the support personnel has gone up." But whether you get a fast and accurate answer depends on the person you get on the telephone and the application, she said.

Jim Krzywicki, Lotus' vice president of worldwide customer support and education, said customers who purchase enterprise support now reach a support analyst in less than a minute on average. For customers on a lower-level support plan, the wait has dropped from a range of 10 to 13 minutes to less than three minutes, he said.

Customer service is getting better, Krzywicki said, because the company has added 400 support people and 65 authorized support providers.

David Marshak, an analyst at Patricia Seybold Group, agreed. But perhaps more important, he said, is that support is now strategic at Lotus. "They now view it as something that improves the relationship with the customer," he said. — Barb Cole-Gomolski

Schwab bolsters Internet effort under flat-fee plan

By Thomas Hoffman

IN A FRONTAL assault against the full-service brokerages that handle 85% of the retail stock trading volume in the U.S., Charles Schwab & Co. next month will bolster its Internet stock trading system with added investment research and guidance services under a new flat-fee payment plan.

The move was designed to help Schwab lure more customers away from full-service brokerages such as Merrill Lynch & Co. and Prudential Securities, Inc., both in New York. The company also is trying to further distance itself from online trading firms such as ETrade Group, Inc. and DLJ Direct, Inc.

Under the plan, Schwab's retail customers will have access to all brokerage services — telephone, branch and online — for $29.95 per month for up to 1,000 shares and 3 cents per share thereafter.

The strategy is expected to help Schwab tighten its stranglehold in the online trading market. And the company stands to save millions of dollars by moving thousands of branch and phone customers into cyberspace, where transaction processing can be done at a fraction of the cost, said Octavio Marenzi, a research director at Meridien Research, Inc. in Needham, Mass.

Schwab "has figured out that Internet transactions cost a lot less, and they're trying to push customers in that direction," Marenzi said.

Between 30% and 40% of Schwab's transactions are electronic, he said. The company claims to have 1.1 million online accounts, which represent less than 25% of its 4.8 million total accounts. Two-thirds of the company's customers own a computer, and 60% have Internet access.

Bill Burnham, an analyst at Piper Jaffray Cos. in Minneapolis, said Schwab's actions were the result of two factors: a need to resolve customer service issues by eliminating two-tier pricing for trading services, and a reaction to recent online trading price cuts by Fidelity Investments. Fidelity, Schwab's biggest discount rival, cut its online trading prices twice in the past six months, from a range of $80 to $100 per trade to a flat $19.95 fee, Burnham said. □

RELATEDLINKS

For these and other related links, point your browser at: *http://www2.computerworld.com/home/online9697.nsf/All/970630stocklinks*

►What Every Investor Should Know: *www.sec.gov/consumer/weisktc.htm*

►Finance NetWatch: *www.global-investor.com/netwatch/*

►The High Tech Investor: *www.want2know.com/invest/invest.htm*

When you're shelling out $4,000,000 to ring in the Year 2000, remember:



SAS® software didn't drop the ball.

While other software companies scramble to help you adapt your programs to handle the Year 2000 crisis, SAS Institute has just one question: *What* crisis? SAS software solutions—from data warehousing to data mining, OLAP to applied analysis—are ready to handle dates through the year 20,000 AD. And you can easily change the interpretation of two-digit years to the 100-year span of your choice.

SAS software customers won't need to shell out the estimated $3-$4 million it will cost the average company to address the Year 2000 issue. So isn't it time you invested in the world's best decision support solutions? From a vendor that will keep you on the leading edge of technology into the new millennium—and beyond? Just visit us at www.sas.com/y2k/ or call 919-677-8200.

SAS Institute Inc.

The Business of Better Decision Making

E-mail: cw@sas.com www.sas.com/y2k/ 919.677.8200 In Canada 1.800.363.8397

SAS is a registered trademark of SAS Institute Inc. Copyright © 1997 by SAS Institute Inc.

SPARC future uncertain

Sun joins OS rush to Intel's 64-bit chip

By Jaikumar Vijayan

SUN MICROSYSTEMS, INC.'S decision to port Solaris onto Merced — the 64-bit chip being developed by Intel Corp. and Hewlett-Packard Co. — should boost the portfolio of enterprise-class operating environments.

The move also has created some uncertainty about the long-term future of Sun's successful SPARC-based hardware architecture, analysts said.

Merced, the first implementation of the IA-64 chip architecture, is Intel's shot at enterprise computing. Apart from a significant boost in raw performance over current IA-32 chips — Merced will start at around 600 MHz — IA-64 is expected to be able to run both x86 and Unix applications equally well.

Systems based on the chip are expected to scale from low-end workstations to multiprocessor enterprise servers, offering nearly the same raw performance as Unix servers and minicomputers.

THE BANDWAGON

Microsoft Corp. has already allied Windows NT with Merced, calling the technology its strategic enterprise development platform. Other Unix vendors committed to porting their operating systems on to Merced include HP, Digital Equipment Corp. and SCO, Inc.

Sun's alliance with Intel adds to the number of solid enterprise-level operating systems that Windows NT will have to compete against on Merced, said Tony Iams, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. "This is significant because NT will not be 64-bit, nor will it offer the same scalability or availability that Unix will" when Merced ships, he said.

Mountain View, Calif.-based Sun and Intel in Santa Clara, Calif., last week entered into a technology and patent cross-licensing agreement that calls for Sun to develop and deliver an optimized version of the 64-bit Solaris for Merced.

Last week's alliance means "users can standardize on Merced architecture with security knowing that they will have an operating system environment that will meet [most] of the enterprise needs they have," said Thomas Kucharvy, president of Summit Strategies, Inc.

Typically, for example, if Intel users today want to scale beyond a certain point, they need to move to RISC-based Unix systems. In the future, the expectation is that they will be able to stick with Merced even if they want to move to Unix.

It also "makes for a better argument that there is an alternative to Windows NT, especially at the high end of the Merced space," Kucharvy said.

And Unix users, who have long been tied to proprietary RISC technology, will have the flexibility to move to cheaper Intel hardware, said Michael Prince, MIS director at Burlington Coat Factory Warehouse Corp. in Burlington, N.J.

"The reason why we have been a Sun shop for such a long time is the excellence of the Solaris operating environment ... and not necessarily their hardware," Prince said. For that reason, "I for one would like to see Sun sell Solaris on Intel boxes," he said. □

HOPPING ON MERCED

Operating systems that will be supported on Merced

Vendor	Operating system
Microsoft	Windows NT
Hewlett-Packard	HP-UX
Digital	Digital Unix
Sun	Solaris
SCO	UnixWare

Eclipsing Sun's SPARC

Porting Solaris to Merced could expose Sun's SPARC-based hardware business — where it made most of its $8.6 billion in revenue last year — to direct competition from Intel vendors, according to analysts.

That's because SPARC-based Solaris systems will be more expensive than Merced-based Solaris systems that offer the same performance, particularly at the low end and midrange, analysts said.

"If Merced is going to have the same performance and the same level of application support that exists for Solaris on SPARC," then moving to Intel hardware would be cheaper, said Rex Hays, a design engineer in the advanced products development group at Eastman Kodak Co. in Rochester, N.Y.

That will inevitably force Sun to abandon its SPARC platforms, although not for at least two to three years, Kucharvy said.

"A one-word summary for the long-term future of SPARC? Poof!" he said. — Jaikumar Vijayan

Apps give users tools to fight macro viruses

By Laura DiDio

MACRO VIRUSES are becoming more prevalent every day, but there are ways to thwart the bugs before they invade your systems and networks.

Thanks to the Internet, macro bugs, which invade systems by hiding in Microsoft Corp. Word documents and electronic-mail attachments, are proliferating at an alarming rate.

In fact, the top four viruses are the macros CAP, Concept, NPad and Wazzu. They account for 41% of all new virus infections, according to Virus Bulletin Ltd. in Oxfordshire, England.

But many newer versions of operating systems and application software have built-in defense mechanisms.

"To date, macro viruses haven't destroyed data or crashed networks. But businesses must still expend time and money to disinfect their networks, and users suffer through downtime. That process can cost a company thousands of dollars and hours of lost productivity," said David LeBlanc, senior Windows NT security engineer at Internet Security Systems, Inc. in Atlanta.

Antivirus makers and software vendors such as Microsoft have responded quickly.

Microsoft's Word 7.0a and 8.0, for example, give users the option to prevent any automatic macro programs from running. Those packages also let users wipe the macro off the document altogether.

Symantec Corp. in Cupertino, Calif., just introduced the Norton AntiVirus for NetWare 4.0 package. It incorporates the company's Bloodhound-Macro technology to identify and eradicate macros.

This new defense against macros is crucial, LeBlanc explained, because the bugs are capable of far more complex and pernicious activities than their boot-sector counterparts. "Macros hitch a ride on larger vehicles: document files like E-mail attachments and spreadsheets for expense reports. And because macro viruses hide within Word documents and E-mail attachments, they inherently have all of the user's access rights and privileges," he said.

DEFENSIVE MEASURES

Users' first and best line of defense is to install virus scanning software and upgrade to newer versions of operating systems and applications. Alternatively, administrators should download the latest patches and fixes.

But even the best preventive measures won't totally eliminate virus infections.

"We're proactive in doing daily virus scanning and weekly checks on our networks, and we still got hit by the Concept macro virus," said Kurt Guerrero, senior LAN architect at Northern Trust Co. in Chicago.

Last spring, the bank was also struck by the Monkey and NYB boot-sector viruses. They infected 150 user desktops before they were detected.

"We had to lock those 150 users out of the network. Then our network administrators had to manually clean up all 150 PCs. It took a crew of 20 people working five hours to disinfect everything. That was 100 manpower hours and cost us $4,000, not including user downtime," Guerrero said. "A malevolent macro virus could make the boot-sector viruses look mild. Six months from now, we could be faced with a totally destructive macro."

To minimize the chance of recurrence, Northern Trust has upgraded to the latest software and antivirus packages.

Jeff Dazell, LAN administrator at Dana Corp., a Toledo, Ohio, auto parts manufacturer with 45,000 desktops, agreed. "Forewarned is forearmed. We scan everything on a regular basis and check all the latest virus bulletins and bug track lists to keep abreast. The network I save may be my own," he said. □

The 300 businesses surveyed by the National Computer Security Association, Inc. in Carlisle, Pa., had a total of 145,753 virus infections on 728,798 machines. That averages out to 62.5 encounters per 1,000 machines during the three-year period covered by the survey.

VIRUS EFFECTS

Average cost of incidents (1997)

Server downtime:	40 minutes
Recovery time:	44 hours
Worker time lost:	22 days
Financial cost:	$8,366

Base: 300 users at large companies

Source: National Computer Security Association, Carlisle, Pa.

RELATED LINKS

For these and other related links, point your browser at:
www2.computerworld.com/home/online9697.nsf/All/971222chiplinks

► CPU Information Center
http://infopad.eecs.berkeley.edu/CIC

► The Processor
www.pcguide.com/ref/cpu/

► The Semiconductor Industry Association
www.semichips.org/

Finally, something for your closet that will always be in fashion.



The SmartSwitch 6000 wiring closet switch.

- LAN/WAN/ATM from one platform
- Distributed switching and management for maximum uptime
- Layer 3 switching, broadcast control, per-port RMON, port mirroring and port trunking
- High-speed uplinks without sacrificing port density
- Scales to throughput exceeding 2,000,000 packets per second with bandwidth exceeding 3.2 Gbps
- Plug-and-play for easy setup

The SmartSwitch family—including solutions for the data center, wiring closet, workgroup and branch office—supports all your converging voice, video and data applications. And a forward-thinking design ensures they'll be hanging around for the long run. They're the simple, reliable, cost-effective solutions for your business.

For more fashion tips, call your local Cabletron reseller or visit us on the Web at **www.cabletron.com/smartswitch6000**.

Cabletron #1 in customer satisfaction!*

CABLETRON SYSTEMS

The Complete Networking Solution™

*based on an independent survey in ComputerWorld (10/6/97)

Corporate: 35 Industrial Way, Rochester, NH 03867 • 603-332-9400 • www.cabletron.com

Insurer gains edge with quicker queries

By Sharon Gaudin
GRAND RAPIDS, MICH.

A TORNADO tears through a small Southern town, tossing about mobile homes like matchsticks and leaving thousands of people homeless.

The last thing victims need is to sit amid the wreckage and wait days or weeks for their insurance company's claims adjuster to show up.



"Why should a customer wait two weeks to get an answer when we can get it to them in two minutes?"

– Shawn Mahoney, Foremost Insurance

Foremost Insurance Co., a mobile home insurer based here, is trying to beat its customers and competitors to the punch, getting agents to customers in need before they have to call for help.

And the company is making it work using New York-based Information Builders, Inc.'s WebFocus, a server-based reporting and analysis tool designed to give any user on the enterprise a link between the corporate intranet and databases.

"A lot of times there's nothing left where their home used to be, and what's left is difficult to find," said Steve Boshoven, senior vice president of information systems at Foremost.

"Before, it might have taken days or even weeks to get the needed information to our claims adjusters, and that's just too long. Now they can go up on the Internet, find out where their customers are, find out if they're going to need extra help and do better customer service."

SPREADING IT OUT

Foremost, which has written $350 million worth of insurance, started using WebFocus to take some of the weight off the four people who had been doing all the queries for the claims adjusters. Now 56 people throughout the organization — whether they are claims adjusters, marketers or executives — make 70% of those queries.

"Why should a customer wait two weeks to get an answer when we can get it to them in two minutes?" said Shawn Mahoney, head of IS at Foremost. "If there's an earthquake in California, our agents can get on the road and find out what ZIP codes have been affected and then calculate the value of those homes we have insured, what the losses will be and how many agents are needed."

And because agents have been empowered to make their own queries, Mahoney's four workers now can spend their time adding information to the data warehouse, giving agents more to cull from.

Evan Quinn, an analyst at International Data Corp. in Framingham, Mass., said Foremost is using the technology to differentiate itself in a highly competitive market.

"That's a customer service claim they can make that most insurance companies cannot at this point," Quinn said. "It raises the bar, and that's what all this technology is about. It's not about being cool on the Web. It's new ways to provide value to the consumer."

Boshoven agreed and said customers are giving the firm higher customer service ratings. "The bottom line is that the technology helps us to understand the losses better and helps us underwrite and price better. If you can't get at that information quickly, right at your fingertips, then you're behind." □

DG tool offers centralized view of Windows NT data

By Tim Ouellette

WITH BUSINESSES bringing Windows NT servers into the enterprise fold, data center managers are clamoring for tools that centrally manage all this distributed data.

So Data General Corp. next month will ship Navisphere, storage management software that can monitor distributed pools of Windows NT and Unix data from one point. The software lets users group and track data by business function across multiple disk arrays instead of organizing data based on its physical location.

ENTERPRISE NETWORKING

DATA VIEW

For example, marketing data could be scattered across several disk systems in the company.

But Navisphere gives users an aggregated view of the marketing storage pool and tracking metrics such as access levels and response times for that data.

Demand for enterprise-level disk systems for expanding Windows NT installations has skyrocketed in the past year.

International Data Corp. in Framingham, Mass., estimates that sales of external disk arrays for Windows NT servers grew 80% this year.

Navisphere runs on a Windows NT, Windows 95 or Sun Microsystems, Inc.'s Solaris workstation.

Initially, it will manage any of DG's Fibre Channel disk subsystems, including the FC5000 Series due in January.

By about midyear, the package also will support DG's SCSI-based arrays, said Mark Vargo, Navisphere marketing manager at Westboro, Mass.-based Data General. And in the future, interfaces could be added for Navisphere to track data collected from other vendors' disk arrays, he said.

Other Navisphere features include automatic problem notification to information systems staff and the ability to pass statistics on to other popular network and systems management suites.

Pricing hasn't been determined. □

Delta flies with Feld

CONTINUED FROM PAGE 1

plus financial and administrative support to launch a learning center for CIOs.

The center's curriculum will include real-life IS case studies drawn from Feld's experiences as CIO in the early 1990s at Dallas-based Frito-Lay, Inc. and subsequent temporary CIO stints at several other Fortune 1,000 companies through his consulting company, Irving, Texas-based Feld Group.

Most recently, Feld served as temporary CIO at Burlington Northern and Santa Fe Railway Co., where he orchestrated the development and implementation of the world's largest, real-time integrated rail management system.

The system was cut over in July. Shortly after, Feld moved on to do some consulting work at Delta, with plans to launch an IT leadership center at his Texas ranch early next year.

COULDN'T PASS UP

"When I left [Burlington Northern], I truly believed that would be my last round at being a CIO," Feld said. "But what Delta came up with is a win-win opportunity. They get a CIO for a couple of years, and I get economic support and a living laboratory for an IT leadership center, which has been my dream."

Specific details regarding how and where Feld will offer his IT leadership courses have yet to be worked out. But Delta has agreed to provide financial and administrative support so Feld and several principals from his consulting group can design case studies from their experiences at Delta.

In Atlanta, Feld has begun to reorganize Delta's IS group by simplifying job descriptions and creating a team of 40 IS directors, who will serve on an IS leadership council.

One of his biggest challenges, he said, is rebuilding the morale of Delta's IS staffers, who have been shifted around quite a bit in the past few years.

In 1995, the airline's IS employees moved over to TransQuest, an IS joint venture and outsourcing contract Delta had entered into with AT&T Corp. But last year, AT&T spun off its outsourcing business, and TransQuest became a Delta subsidiary.

Outsourcing IS "was very stressful and very disruptive for the organization," said Paul Matsen, Delta Technology's CEO, to whom Feld now reports.

"One of the first things Charlie identified for us was the need to establish a leadership team and leadership development. What we agreed is that this can become a working model for him to develop his ideas for his [CIO] institute," Matsen said. □

"What Delta came up with is a win-win opportunity."

– CHARLIE FELD



DOUG HOPPER

GREAT DEAL

51 issues ~~$[illegible]~~ $39.95

Subscribe today and get Computerworld delivered to you for only 78¢ an issue. You SAVE over 73% off the single copy price.

First Name MI Last Name

Title

Company

E-mail address

Address

City State Zip

Address Shown: ❑ Home ❑ Business ❑ New ❑ Renew Single copy price: $3.00/issue.
* U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.
Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportetion
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufecturer of Computers, Computer-Releted Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Buraeus, Softwere Plenning & Consulting Services
90. Computer/Peripheral Dealer/Dist./Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19 Chief Informetion Officer/Vice President/ Asst. VP IS/MIS/DP Menagement
21. Dir./Mgr. MIS Services, Informetion Center
22. Dir./Mgr. Network Sys., Deta/Tele. Comm., LAN Mgr./PC Mgr., Tech Plenning, Admin. Svs.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Manegement, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgmt.
60. Sys. Integrators/VARs/Consultlng Mgmt.
CORPORATE MANAGEMENT
11. President, Owner/Pertner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Seles & Mktg. Management
70. Medical, Legal, Accounting Mgmt.
OTHER PROFESSIONAL MANAGEMENT
80. Informetion Centers/Libraries, Educators, Joumalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
Operating Systems
(a) Solaris (e) Mac OS
(b) NetWare (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep
App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

COMPUTERWORLD

B2M7 U

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-2144

Network integrator offers one-time service pricing

By Patrick Dryden

BUY NOW, DON'T PAY LATER. That's the new option for financing a network performance monitoring service from integrator International Network Services, Inc. (INS) in Sunnyvale, Calif.

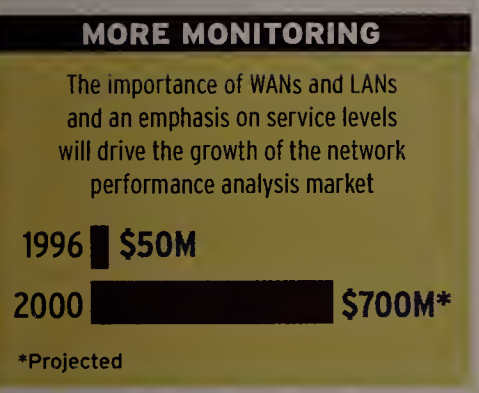
The move improves the ability of INS to compete against vendors of analysis and reporting tools. And it helps information systems groups overcome financial barriers to specialized outsourcing, industry analysts said.

INS hits a roadblock when it comes time to close a deal with IS shops, said Richard Brewer, an analyst at International Data Corp. in Framingham, Mass.

"It's easier to buy a CD than to subscribe to a service," Brewer said. "It's tougher to apply an operational budget spanning multiple business units than a central purchasing budget under direct IS control."

MORE MONITORING

The importance of WANs and LANs and an emphasis on service levels will drive the growth of the network performance analysis market



Source: Dataquest, San Jose, Calif.

More than 150 large organizations subscribe to EnterprisePro, a turnkey service by which INS engineers maintain a data-gathering server, analyze myriad statistics and deliver World Wide Web-based reports that explain network performance in business terms.

INS now offers the same service in product form. That means users can finance EnterprisePro once from a capital budget instead of paying a recurring expense from an operating budget.

"Up-front pricing will help enterprise IS groups who want to own products for accounting purposes or because they shy away from outsourcing," said Eric Hindin, an analyst at The Yankee Group in Boston.

NEW STRATEGY

The new licensing approach is a "more attractive procurement option" that opened the door at Becton Dickenson Immunocytology Systems, Inc., said Lori Arashiro, manager of network operations in San Jose, Calif.

INS should be able to overcome the sales barrier that prevented about 30 organizations from adopting EnterprisePro in the past year, said Mark Bouchard, an analyst at Meta Group, Inc. in Westport, Conn.

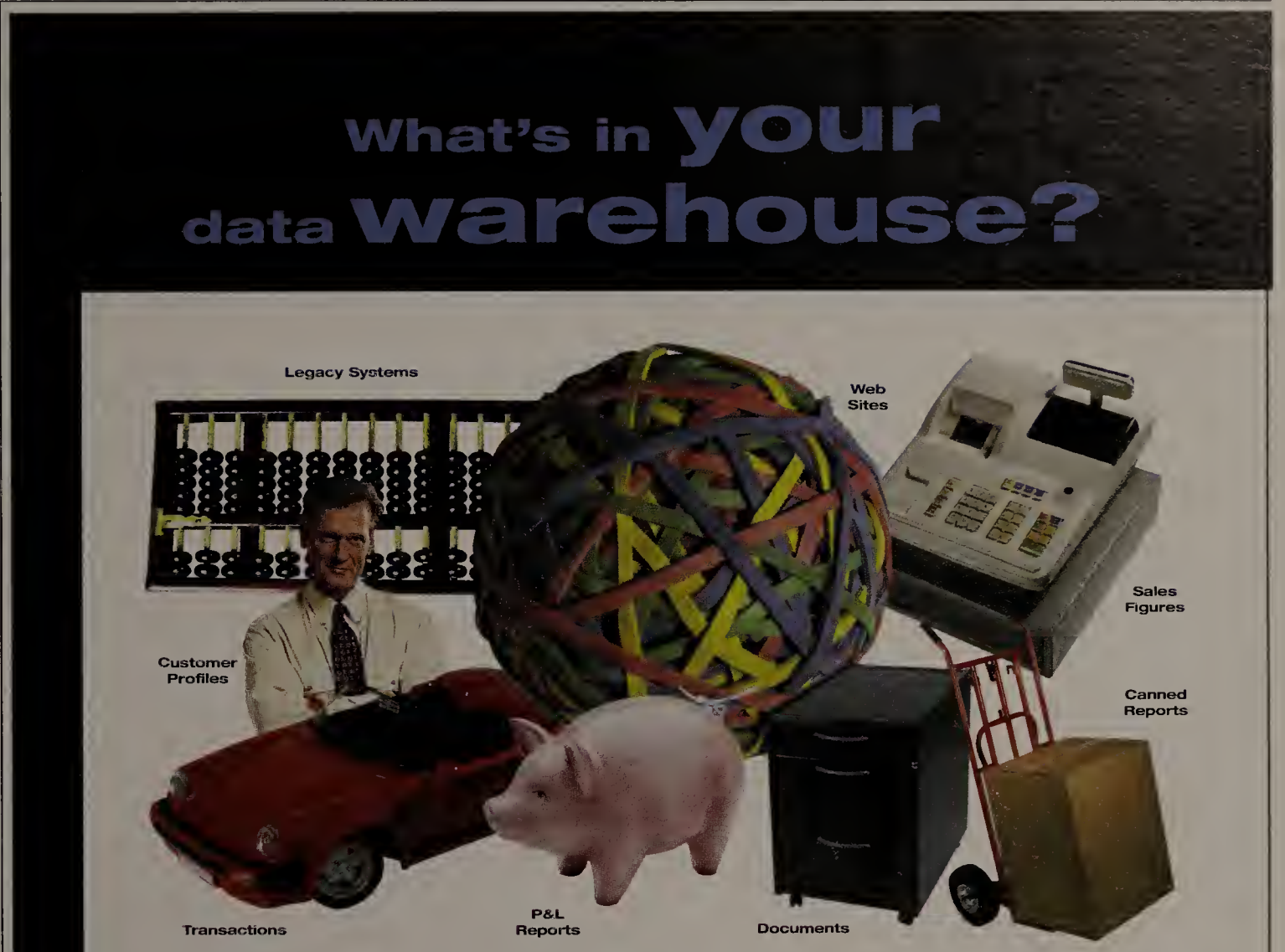
For example, users who pay about $9,000 per year now to monitor between 30 and 50 network devices would pay a little more than $77,000 to license EnterprisePro, plus a small monthly maintenance fee.

"A 'productized service' is an innovative and appealing approach to outsourcing. But be cautious about the uncertainty factor inherent in all outsourcing deals," said Frank Casale, executive director of Outsourcing Institute Ltd. in New York.

Make sure the license that replaces a contract spells out service levels and contains appropriate termination clauses typical of outsourcing relationships, he advised.

When priced as a product, EnterprisePro competes with the Network Health suite from Concord Communications, Inc. in Marlboro, Mass., analysts said.

"INS' long term goal may really be to entice the carriers to buy and customize EnterprisePro, as they have done with Concord's tools," Hindin said. □

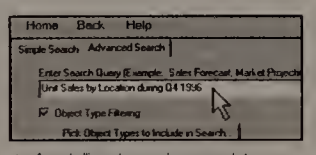


Introducing Universal Directory. The first tool to help users search, understand and take full advantage of your data warehouse.

Data warehouses and data marts. In theory, an incredible resource for your users.

But how do you encourage users to actually use the warehouse? Help them understand what's there? Where it came from? How often it's updated? And how do you and your development team keep track of it all?

Universal Directory™ is an information directory that gives users an easy-to-use "Yellow Pages" about your warehouse. Its powerful search engine lets users find, understand and take advantage of information assets wherever they may reside. Helping them use the warehouse more. And ensuring a better return on your warehouse investment.

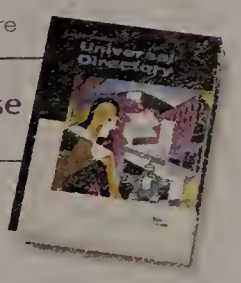


▲ *An intelligent search engine lets users explore information assets in the warehouse ..and beyond*

For your IS team, Universal Directory speeds warehouse development and management. Giving you a central place to store data definitions like origin and physical location. It's deployed easily on corporate intranets using a Java-based explorer.

Universal Directory. Because the more your warehouse gets used, the more successful it is. **Get our free guide:** "Bridging the Data Warehousing Credibility Gap," by visiting www.logicworks.com. Or call 1-800-783-7946. Outside the U.S., call (609) 514-1177

The Data Warehouse Yellow Pages



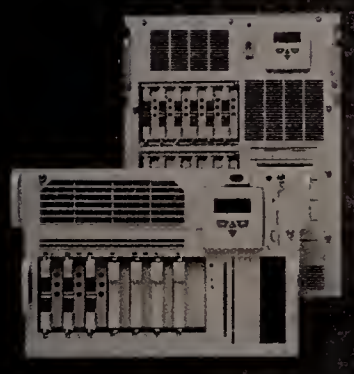
logic works®

Logic Works is a U.S. registered trademark of Logic Works, Inc. and Universal Directory are trademarks of Logic Works, Inc. ©1997



JUST WHAT EVERY COMPAN
A WORKAHOLIC WITH A TEA

intel inside
PENTIUM PRO



The Compaq ProLiant 6500 and ProLiant 7000 industry-standard servers offer the performance and availability demanded by 7x24 business-critical application environments.

With features like the first industry-standard PCI hot plug platform, hot plug disk drives and power supplies, they provide unparalleled availability, scalability and manageability.

To satisfy your most demanding applications, Compaq, in partnership with Tandem and Microsoft, is creating an industry-leading line of cluster solutions. Both the ProLiant 6500 and ProLiant 7000 provide rock-solid failover functionality with Microsoft Wolfpack cluster-enabled software.

The result: costs are reduced, risk is lowered, productivity improves and the implementation time required is decreased.

And to demonstrate our continued commitment to our customers' future success, Compaq now offers Year 2000 Readiness warranty coverage, and independent NSTL compliance testing.

The Compaq ProLiant 6500 and ProLiant 7000. They're the type of business-critical servers your company needs. They're the type of servers the world's leading provider of computers makes.

www.compaq.com/products/servers

A peek inside the elite Research Board

CONTINUED FROM PAGE 1

Only handpicked CIOs from companies that have annual sales greater than $10 billion are invited to join the elite group. The members — currently 38 men and seven women — are privy to what they claim is the most sophisticated and forward-looking research available on information systems.

And the member CIOs collectively wield more than $15 billion worth of IS buying power.



CHRISTOPHER WEIL

CIO members who meet inside these doors are privy to what they say is the most sophisticated research available on IS systems

So when the board summons Bill Gates, Scott McNealy or Larry Ellison to its highbrow meetings, the vendor CEOs come running.

In the simplest terms, the Research Board publishes analytical reports and holds meetings to discuss them. But these aren't ordinary analyst bulletins. Several of the researchers have economics degrees from MIT and the London School of Economics, so the analysis is heavy on global economic trends.

IN CONTEXT

The style of the reports is pithy. The goal is to put technology in a larger business and economic context, which is exactly what the member CIOs said they like.

"This isn't about 32 meg vs. 64 meg [of PC memory]. This is strategic," said Ken Smee, formerly the CIO at Royal Bank of Canada in Toronto and a five-year veteran of the board. Smee recalled that he wouldn't buy Lotus Development Corp.'s Notes, for example, until he had "absorbed" the board's report on knowledge management.

The board's 28-person staff has 12 researchers who publish three reports per year — one before each formal meeting.

The reports are guarded like classified government documents. They are hardbound books, 70 to 100 pages each, on topics the CIOs vote on every spring.

So highly regarded is the research that Dennis Jones, CIO at Federal Express Corp. in Memphis, rips up his schedule the day a report arrives so he can spend two or three hours reading it.

The Research Board is "the only outside forum or research group of any kind that I make time to go to," Jones said.

Several members said the Research Board's reports are insightful, free from vendor bias and consistent in identifying trends up to a year before other consultants do.

For example, a 1993 report titled "Invisible Hands" correctly challenged the notion that client/server was a cheaper architecture than mainframe computing, even before client/server systems had caught on generally.

"There was a gut feel on our part that [client/server] wasn't cheaper, but we couldn't prove it," said June Drewry, chief knowledge and technology officer at Lincoln National Corp. in Fort Wayne, Ind. "Theirs was the first good, solid research I could get my hands on." Drewry is a member of a sister group called the Associate Board.

In a recent cost-cutting move, Ralph Szygenda, CIO at General Motors Corp., said he consolidated the company's various subscriptions for market research from companies such as Gartner Group, Inc. and Forrester Research, Inc.

But he didn't touch the kitty for Research Board membership.

TIGHT-LIPPED

Research Board co-founder Naomi Seligman wouldn't disclose the annual membership fee, which sources estimated at $50,000 to $70,000 per person. She also declined to discuss the board's budget or other finances.



"We are not secretive," but discretion is critical. – Naomi Seligman, co-founder, Research Board

Like the New York townhouse it occupies, the Research Board is privately owned by Seligman, 64, and Ernest von Simson, 59. The company also runs two sister groups, one for CIOs at smaller companies and one for CIOs in Europe (see chart).

The Research Board has some strict rules: Vendors can't be members. CIOs can't send substitutes to meetings. And meetings don't include golf games or social outings.

This is serious business. The three all-day, coat-and-tie sessions each year are rigorous affairs. They aren't for wallflowers or braggarts.

The CIOs are expected to talk intelligently about business strategy and must thoroughly read the report before the discussion.



The board speaks more powerfully than any single CIO could. – June Drewry, Lincoln National

In fact, one CIO was asked to leave the board a few years ago for not following the rules. "He did not read the reports and talked a lot. It was a dreadful combination," Seligman said.

Everyone, she said, is expected to keep Research Board discussions confidential.

Among outsiders, the board has a reputation for being tight-lipped.

"Several members are good friends of mine who would show me [their own] company plans and documents," said Peter G. W. Keen, a management consultant and *Computerworld* columnist. "But I've never seen a Research Board report."

Indeed, the board won't release a copy of any of its 72 existing volumes nor a full membership roster. No current or former members returned calls to talk about the board until they got the nod from Seligman.

"We are not secretive," Seligman insisted. Rather, the Research Board staff builds "close relationships" with members in which discretion is critical, she said.

Several CIOs said Research Board reports have triggered major changes to their IS plans over the years.

New York-based Merrill Lynch & Co. became a big user of Sun Microsystems, Inc.'s Unix servers, in part because the board in the early 1990s tagged Sun as an up-and-comer, said former Merrill Lynch CIO DuWayne Peterson.

"We may have missed that thrust at Merrill if they hadn't helped me sort it out," Peterson said.

ATTRACTION

That kind of influence means vendors salivate to make presentations at Research Board meetings.

"This kind of access is pretty fantastic," said Scott McNealy, CEO of Mountain View, Calif.-based Sun. "They are exactly who we're trying to sell to." He said he also attends to hear what the CIOs have to say.

But the CEOs of software and hardware firms may address the board only when invited. And they dare not bring any hardware or software to show off. In its 24 years, the board has allowed but one product demonstration: the Macintosh in 1984.

This year, the idea of network computers was addressed by CEO heavyweights Bill Gates of Microsoft Corp., Larry Ellison of Oracle Corp. and Jim Barksdale of Netscape Communications Corp., among others.

A highlight of the meetings is when the CIOs get to grill the

Research Board dissected

Separate Board-sponsored meetings of IS human resources managers and IT infrastructure managers bring in additional revenue, but the majority comes from these CIO groups:

	Research Board	European Research Board	Associate Board
Members	45	25	46
Minimum company sales*	$10B	$12B average	$4B
Membership fee**	$50,000-$70,000	$50,000-$70,000	mid-$40,000
Sample members	American Express Co. The Dow Chemical Co. General Motors Corp.	Bertelsmann AG El Corte Ingles SA Nestle SA	Levi Strauss & Co. Lincoln National Corp. Goldman, Sachs & Co.

*Some companies with lower revenues have been grandfathered in

**Estimated; the Research Board declined to comment on financial issues

Research Board influences information systems heavyweights

vendor CEOs in question-and-answer sessions, which can sometimes be contentious.

In one case a few years ago, the CEO of a major software maker was invited to address CIO complaints about his company's service and licensing terms, Jones recalled. After a "tense" discussion, neither side budged.

Jones said the upshot was that member CIOs try "not to buy from that firm," which he wouldn't name.

Added Marty Lippert, Royal Bank of Canada's current CIO, "Here are 40 or 50 representatives of the largest purchasers of technology in the market. If you're not going to listen to us, what in God's name would make you change your mind?"

The board speaks more powerfully than any single CIO could, Lincoln National's Drewry agreed.

"The vendors have a desire to maintain a relationship with the board. There's no 'To hell with you; you're only one potential customer,'" she said. □



CHRISTOPHER WEIL

The building where the Research Board meets was built in 1910 and is owned by board founders Naomi Seligman and Ernest von Simson

Beyond tech talk

Among the 72 volumes lining the handsome shelves inside the Research Board's New York headquarters, you probably won't find any reports comparing palmtops or debating C++ vs. Java.

The Board's goal is to get beyond technology talk and view the industry from the CIO's seat.

Even the report titles aren't typical analyst fare. "Pipedreams and Panic" covered telecommunications reform; "What We Don't Know" was about network computers; "Musical Chariots" studied vendors' competitive strategies.

Researchers at the Board have earned degrees from such places as MIT's Sloan School of Management and the London School of Economics.

Marty Lippert, CIO at Royal Bank of Canada, relies in part on the reports to help him budget for projects.

Based on Research Board findings, he said, "you move [investment dollars] along more quickly if the technology is further along than we anticipated. Or we hold back a little if there are some risks."

Lippert said the Board's report on the Internet almost two years ago helped him understand where and when to put money into electronic-commerce applications.

The research is routinely "12 and 15 months ahead of the general consulting world," Lippert said.

— Kim S. Nash





IT'S NOT HOW MUCH YOU READ.

You can read a knee-high stack of computer magazines each month and still not find the depth and breadth of news and information you'll discover each week in the pages of *Computerworld.*

As the only weekly newspaper for IS professionals, *Computerworld* is filled with up-to-the-minute articles on topics ranging from products and people to trends and technology. We cover it all — PC's, workstations, mainframes, client/server computing, networking, communications, open systems, World Wide Web, intranets, and more.

It's everything you need to know to get an edge on the competition.

That's why over 152,000 IS professionals pay to subscribe to *Computerworld.* Shouldn't you?

IT'S WHAT YOU READ.

Order *Computerworld* and you'll receive 51 information-packed issues. Plus, you'll receive our special bonus publication, *The Premier 100,* an annual profile of the leading companies using information systems technology.

Call us toll-free at **1-800-343-6474**, or visit us on the World Wide Web at http://www.computerworld.com. To order by mail, use the postage-paid subscription card bound into this issue. And get your own copy of *Computerworld.*

Then you can spend less time reading about the world of information systems. And more time conquering it.

COMPUTERWORLD

The Newsweekly for Information Technology Leaders

Look What Unicenter



COMPUTER® ASSOCIATES
Software superior by design.

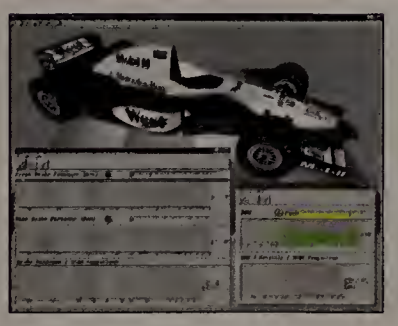
Is Managing Now.



When we say Unicenter® can manage anything, anywhere, we mean it.

As this Formula One MP4/12 car races along at speeds in excess of 210 miles per hour, pulling G forces that rival a jet fighter plane, it broadcasts hundreds of megabytes of critical telemetry data back to the pit crew. They use it to make split-second decisions that often mean the difference between victory and defeat.

Unicenter® TNG™ helps the West McLaren Mercedes race team—one of the winningest teams in Formula One history—interpret this vital information through Unicenter TNG's sophisticated manager/agent technology, and a revolutionary 3-D interface. Everything that's happening, from the pressure on the left rear brake pad to the down-force of the chassis set-up, can be monitored and managed through Unicenter TNG.



Unicenter TNG's Real World Interface™ analyzes critical performance measures such as front and rear brake pressure impact on car speed.

By looking at this data in a whole new way, the West McLaren Mercedes race team can now make smarter decisions in less time. In a business where hundredths of a second can mean the world, Unicenter TNG is making a difference.

This is just one example of how Unicenter TNG today is managing all kinds of non-IT devices for all kinds of organizations.

Call us to find out how Unicenter TNG can help you be more competitive.

Call 1-888-UNICENTER or visit www.cai.com

Unicenter® TNG™

©1997 Computer Associates International, Inc., Islandia, NY 11788-7000. All other product names referenced herein are trademarks of their respective companies.

Server consolidation a tricky affair for users

By Jaikumar Vijayan

SERVER CONSOLIDATION may sound like a great way to cut operating costs and centralize management of midrange Unix and Windows NT servers. However, immature software partitioning capabilities and the relative lack of workload management tools could make such consolidation tricky, said researchers at Meta Group, Inc. in Stamford, Conn.

The issue is becoming more important now that more firms want to centralize or consolidate distributed servers. Motivations include reducing management complexity, cutting maintenance and systems costs, and better leveraging under used server hardware [CW, Aug. 11].

"Consolidation brings with it the ability to feel like you are back in control" of your server assets, said Rich Partridge, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

But it also "can open up a whole new cadre of complexities" in performance management issues and sharing of resources such as tape drives, storage disks, peripherals and memory, said Terry Cieslak, chief technology officer at May & Speh in Downers Grove, Ill.

The information management services company is consolidating applications from five Hewlett-Packard Co. servers onto one large Sun Microsystems, Inc. server. Cieslak estimated the move will save the company about a half-million dollars in management and administration costs over the next five years.

Server consolidation involves taking multiple applications running on several servers and loading them onto a large server. Success depends on how well partitioned the multiple applications are on the consolidated server.

A few high-end Unix boxes — such as Sun's Ultra Enterprise 10000 and IBM's SP — are being positioned as consolidation servers. Those machines offer users a way to virtually partition the servers to handle multiple applications.

Despite the performance offered by such servers, Unix generally can't offer the same levels of flexibility or robustness as traditional mainframe-based software partitioning. "It is really a question of the capabilities needing to mature" a bit more in the Unix space, Cieslak said.

For instance, putting a data warehouse application and an online transaction processing application on the same server could degrade server performance. The degree of performance tuning and workload management possible within a mainframe still aren't available on Unix, said Meta analyst Brian Richardson.

Reconfiguring workloads on a consolidated Unix server is more difficult than doing it on a mainframe. Similarly, most Unix systems lack the same global I/O and peripheral management capabilities as a mainframe environment such as MVS, analysts noted.

Hugh Allan, database administrator at Dunlop Tire Co. in Amherst, N.Y., said top on his list of reasons against consolidation are performance tuning issues and the hassles involved in upgrading applications on a consolidated server.

At the lower end, new symmetrical multiprocessing systems and emerging technologies that will let users dedicate CPUs for specific applications are making server consolidations possible in the Intel Corp. space, as well. □





READ FOR POWER



☑ 51 issues for ~~$48~~. Now only $39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ❑ Home ❑ Business ❑ New ❑ Renew *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/ Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./ Retailer
- 95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Mgmt.
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
- (a) Solaris (e) Mac OS
- (b) NetWare (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTStep

App. Development Products ❑ Yes ❑ No

Networking Products ❑ Yes ❑ No

4. Do you use, evaluate, specify, recommend or approve the purchase of Internet products and/or services?

❑ Yes ❑ No B4M7 O

READ FOR KNOWLEDGE

☑ 51 issues for ~~$48~~. Now only $39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ❑ Home ❑ Business ❑ New ❑ Renew *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Mgmt.
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
(b) NetWare (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Development Products ❑ Yes ❑ No

Networking Products ❑ Yes ❑ No

4. Do you use, evaluate, specify, recommend or approve the purchase of Internet products and/or services?

❑ Yes ❑ No B4M7 O

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

Computer Industry

Briefs

Corel expects big loss

Corel Corp. officials last week said the company expects to report a fourth-quarter loss of about $95 million on net sales of $44 million.

Officials at the Ottawa company attributed the results to its transition to a just-in-time inventory model, which meant Corel held back on shipments to reduce inventory in the channel. Corel expects to announce final results Jan. 13.

Tektronix sales rise

Tektronix, Inc. in Wilsonville, Ore., last week reported that earnings for the second quarter in fiscal 1998 increased 20% to $31.7 million, excluding a onetime charge. Net sales increased 11% to $529 million.

Micron disappoints

Micron Technology, Inc. in Boise, Idaho, blamed declining memory prices for lower-than-expected earnings in the first quarter.

The producer of computer memory chips reported that net income for its first quarter of fiscal 1998, which ended Nov. 27, totaled $10 million Net sales for the quarter were $955 million.

In the same quarter a year earlier, the company reported $728.1 million in sales. Micron officials said the average selling price per megabit for semiconductors declined 25% for the quarter and 75% for the fiscal year.

Cable & Wireless buy

Cable & Wireless Communications PLC, the U.K. entertainment and telecommunications group, plans to acquire the data and network cabling operations of Anite Group PLC for $77.5 million, the company announced today.

Cable & Wireless will purchase Anite Group's network integration and support subsidiary, called Anite Networks Ltd., and its Grant & Taylor unit, a structured cabling company, in a bid to enter the fast-growing market for data services telecommunications.

Cabletron plots turnaround

▸ *CEO Reed's plan will expand product line, improve distribution and lead to acquisitions*

By Laura DiDio

CABLETRON SYSTEMS, INC.'S new president and CEO, Don Reed, today is expected to outline a turnaround plan that calls for broadening the networking vendor's product line, diving into the acquisitions market and boosting Cabletron's relationship with distributors.

Cabletron three weeks ago warned Wall Street that its 1998 third-quarter sales would be off by about 10%, declining to between $330 million and $340 million compared with $361.3 million a year earlier.

The company last week announced it will lay off 600 workers — nearly 10% of its workforce — and will close several manufacturing facilities as part of an overall company restructuring.

Glenn Gabriel Ben-Yosef, president of Clear Thinking Research, Inc., a Boston consultancy, said Cabletron's main challenge is to move the 25% of its user base that is on the company's legacy shared hubs into the routing arena.

Reed is addressing that issue with a plan to expand Cabletron's product portfolio to further embrace the wide area.

Reed also is expected to announce plans to step up the pace of acquisitions. Cabletron has been criticized for keeping a tight hold on the purse strings; it has bought only six smaller firms. Its competitors have gone on a buying spree, acquiring many more companies.

But that changed Nov. 25 when Cabletron bought Digital Equipment Corp.'s Networking Products group in a deal valued at $400 million [CW, Dec. 1].

Other initiatives include renewed emphasis on Cabletron's Spectrum enterprise wide management platform and a bigger presence among Internet service providers.

Reed also will detail plans to expand Cabletron's relationships with distributors through newly announced deals with Ingram-Micro, Inc. in Santa Ana, Calif., and Tech Data Corp. in Clearwater, Fla., a company spokesman said.

Analysts said they were buoyed by the moves.

"I like Don Reed and his strategy to revive Cabletron," said Bill Becklean, an analyst at the Boston investment firm of Tucker Anthony, Inc. He said Cabletron's model of direct sales and few acquisitions no longer works in an internetworking market dominated by Cisco Systems, Inc. and 3Com Corp., which between them have bought three dozen smaller firms.

"Reed seems to be attacking problems head-on starting with building an indirect channel, consolidating the five New England manufacturing facilities, trimming the workforce and getting their list prices more in line with street prices," Becklean said. "I believe Reed has the ability and the will to make the necessary changes."

Ben-Yosef said he, too, is bullish on Cabletron — with a few caveats.

"They still have some gaps in their product portfolio. They need high-speed routing products, and they should consider acquisitions in this market," he said. □

CABLETRON REWIRES

Company: Cabletron Systems, Inc.

Headquarters: Rochester, N.H.

Employees: 6,800 worldwide (before layoffs)

Predicted revenue, fiscal Q3 1998: $330M to $340M, compared with $361M for the same quarter last year

Predicted earnings per share: 8 to 12 cents

Latest actions:

- Plans $25M to $30M pretax charge for fiscal Q4 1998
- Will close plants in Nashua, N.H., and Andover, Mass.
- Will lay off 600 employees worldwide

Microsoft/SGI ally on 3-D graphic apps

By Jaikumar Vijayan

SILICON GRAPHICS, INC.'S (SGI) alliance with Microsoft Corp. will eventually give users access to fast, high-performance three-dimensional graphics applications on commodity Wintel hardware.

In the short term, the alliance between two of the industry's most influential graphics players will give third-party software developers a common standard and large installed base at which to target their applications.

The alliance, announced last week, calls for both companies to develop and deliver new graphics technologies based on Microsoft's Windows NT and SGI's Irix — a version of Unix — operating systems.

SGI's Unix-based graphics technologies have long been considered among the industry's best. But its market — especially at the low end — has been coming under increasing pressure from low-priced Windows NT workstations.

The past few years have also seen a rapidly growing number of third-party vendors porting their Unix-based graphics applications over to NT. Such pressures recently pushed SGI into announcing that it will start manufacturing Windows NT-based workstations next year.

Because the new alliance gives software vendors a common base to write for, "it sort of means they can focus on getting good products out and not have to worry about whether their technology will be used in the broad market," said Greg Weiss, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

"Microsoft also wanted to get a hold of the SGI graphics library. It certainly is the most robust and widely supported in the industry," said Thomas Kucharvy, president of Summit Strategies, Inc. in Boston.

Code-named Fahrenheit, the alliance will create a common suite of application programming interfaces (API) that combine Microsoft's Windows-based Direct3D and DirectDraw APIs with SGI's Unix-based OpenGL technologies.

Deliverables include a low-level API for consumer and commercial graphics applications on Windows, a higher-level API based on both Windows and Irix and a large model visualization API. □

HEATING UP

SGI/Microsoft Fahrenheit project will produce:

Low-level API: Primary graphics interface for consumer and professional applications on Windows

Scene Graph API: Will provide high-level data structures and algorithms to increase overall graphics performance

Large Model Visualization Extensions: Will allow interactive manipulation of large 3-D models

Of course we can

protect

your information

on the

Internet.



After all, this was one of our test sites.

No one has more experience in Internet security than GTE Internetworking, a newly formed company which joins the forces of GTE and BBN. We've developed highly secure networks for the Department of Defense and the U.S. Treasury. And now our security experience is open to you.

For example, through our partnerships with the government we've learned it's not enough to simply connect a firewall to your existing network. It has to be rigorously monitored to be truly bullet-proof. GTE Internetworking Site Patrol℠ managed security service gives your business 24-hour expert protection, 365 days a year.

Considering the climate of business today, treating your information as anything less than a matter of national security just isn't enough.

To find out more, call us at 800.472.4565, or visit us at www.internetworking.gte.com.

GTE

INTERNETWORKING
POWERED BY BBN™

OPINION

Don't even ask "So, are you done Christmas shopping yet?"

That sadistic question has been popping out of the mouths of everyone I meet lately, making me feel positively under siege. Of course I haven't finished shopping yet! On a scale of 1 to 10, my degree of doneness is hovering at about 3.

Listen, I tried that Internet shopping hoo-ha we've been hyperventilating about in the press, and it's a time-sink nightmare.

I dare you to try and find a plaid bathrobe on the L. L. Bean Web site without losing your mind.

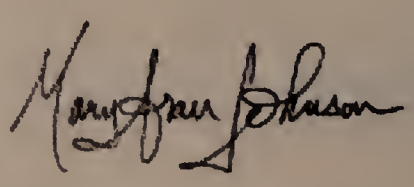
And I haven't even begun to work my way down my 12-year-old's fully annotated list, which fills two



pages of lined notebook paper, front and back, every line. (I ask you: Is a mini-refrigerator for her bedroom a normal gift request?)

So in a frantic effort to distract myself from the hostility that I feel every blessed time some idiot asks me that question, I've come up with a few questions of my own. Instead of the "12 Days of Christmas," consider "The 12 Questions Not To Ask Your CIO During the Holidays."

1. Is that year 2000 conversion still on schedule?
2. Hey, lose much in that Oracle stock plunge?
3. You really think NT will scale up to 50,000 users?
4. Was that our SAP project manager I saw lunching with that headhunter?
5. Keeping up with your E-mail?
6. We're really rewriting the payroll system in Java?
7. Geez, is it true the new webmaster forged his work papers and is only 15 years old?
8. How come the help desk doesn't answer the phone anymore?
9. How's that installation of Lotus Notes going?
10. Who ordered those network computers to replace all our PCs?
11. Did you see our home page today? Do you think those hackers were serious?
12. Was that the CEO I saw waiting in your office? He's got some guy from EDS with him, and they were shaking hands . . .



Maryfran Johnson, *executive editor*
Internet: *maryfran_johnson@cw.com*



LETTERS

'Booth bimbos' don't reflect IS women

I FELT MUCH BETTER about the presence of booth bimbos after I read Gary Anthes' column [" 'Booth bimbos' – women in IS? Poppycock," CW, Dec. 1).

I've been in high tech since the early 1980s and have noticed that while the presence of booth bimbos is not as blatant or expansive as it was in the '80s, they are still there.

And I have wondered, as Laura DiDio noted in her original column on this subject ["Booth bimbo bingo," CW, Nov. 17], what my male co-workers and other attendees think of me when they encounter these beautiful yet mindless women in what should be a business environment rather than an entertainment venue. It has made me extremely uncomfortable at these trade shows.

Anthes' perspective, which gives men credit for seeing past the stereotypes, made me breathe a huge sigh of relief. It's the answer to a silent question I've had for many years. Thank you.

Linda Vande Vrede
PID Corporate Communications
Phoenix
linda.vandevrede@pid.com

I ENJOYED GARY ANTHES' opinion piece about the "booth bimbos" at Comdex. As he astutely pointed out, there is no shortage of quality, intelligent women in IS. I was fortunate enough to be featured earlier this year in *Computerworld*, and I think your publication goes out of its way to feature commentary and input from a variety of excellent IT professionals – many of whom just happen to be women.

I don't think I, or any woman in my peer group, would have time to get hot and bothered about nubile young women at Comdex somehow discrediting women in IS. We would hardly think of them at all.

It falls in the same category as the Hooters waitresses, where women choose to pursue a certain line of work that leverages their personal assets. How does anyone know that these women don't enjoy what they are doing just as much as any IT professional would? I hardly think they have been enslaved for this purpose.

Not many women in IS have time to get upset about nubile young women at Comdex discrediting them.

Debbi Gillotti
Senior vice president and CIO
Starbucks, Inc.
Seattle

I FOUND GARY ANTHES' statements concerning Laura DiDio's column on "booth bimbos" at Comdex to be somewhat flawed. Obviously there are men (and maybe some women, too) who can't see past outdated stereotypes: The people who made the decision to represent their companies at Comdex with the booth bimbos would be a good example.

The very fact that this practice is continued and accepted says volumes about the state of perception in a portion of the IS community.

I think it's too soon to call the battle won, and I'll bet that a good number of IS women would agree.

Eric J. Smith
Slingerlands, N.Y.
ejhonda@capital.net

Why does it cost more to buy Macs direct online?

IN YOUR NOV. 17 article "Apple to sell direct with online store; users wary," you say that "resellers can still cut the price of an Apple computer sold online by as much as $500." What am I missing here?

I thought online sales — directly from the manufacturer — eliminated the middleman and reduced a lot of overhead that would normally be absorbed by the customer. Why is it more expensive then?

Is this akin to the way banks want to charge their customers for using an automated teller on the sidewalk, while the same banks offer the same services for free from a paid human being inside a building that's taking up a huge chunk of prime real estate?

Jacques C. Kaufman
Binghamton, N.Y.
jkaufman@spectra.net

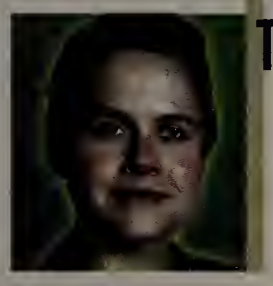
Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Paying with personal information — yours

Emily Frye

Concern about loss of personal privacy has grown in recent years until it has become a cliche: We are losing our privacy! It's true that a lot of information that used to be private is now widely available — on the Internet, in databases and elsewhere.

Sometimes the data gets converted into forms we don't recognize, like when it's sold to advertisers who solicit us with offers for products we don't want. Some people feel that's a violation of their personal space.



Is the price worth getting a newspaper on the 'net? That's up to you.

But maybe we're losing some of our privacy because we don't really want it.

Why would I say that? First, let me draw a distinction between privacy and personhood.

A lot of people seem to fear that sharing personal information is equivalent to a loss of personhood — that is, their personality, their very essence. I disagree.

All the bits of personal information that someone could gather about me through various media — even if those bits included my banking habits, purchasing patterns, grocery preferences and hobbies — would be a pitifully inadequate representation of me.

A legal analysis of the personal privacy issue won't please folks who think of privacy as an emotionally charged fundamental rights issue. I'm one of those fundamental rights people, too, when it comes to medical privacy. But regular old, run-of-the-mill data?

One way to illustrate that it isn't so bad for us to lose some privacy is to look at a common example of how personal data enters the broad stream of commerce.

THE PAYMENT PLAN

Let's say I want to read *The New York Times* but not buy it. I could either trek to the library, or I could access it from home — as long as I surrender some information about myself, including my name, E-mail address, ZIP code, age and sex, on an electronic form.

Is it worth it? That's up to you. If you don't want others to know your name, address, hobbies and purchasing habits, then you don't have to give them up. You can structure the contract — because that's exactly what it is, a contract for services — some other way. Your "payment," whether in the form of money or information, entitles you to a service (the *Times*) in return.

I think we're troubled by payment in the form of personal information because it isn't as clear-cut as a fee-for-service arrangement. When I stop paying money, the *Times* stops delivering the paper to my doorstep. But if I stop reading the *Times* online, it still has my information.

I suggest we look at that exchange as a one-time, lump-sum payment contract. When you pay for a TV set, you have no idea what the seller is going to do with the payment he's received. And you probably don't care. Presumably, you have weighed the risks and benefits involved and have decided that the use of the television is worth the loss of the cash.

Personal information is a little more, well, personal than money. But the question is the same: Is the good you will receive worth the price you're being asked to pay? If so, then you will "buy" the good.

And if the price is personal information, we're smart enough to decide for ourselves what information we are willing to let fly into the stream of commerce — just like we decide when to let go of our dollars and cents. □

Frye is an Evanston, Ill., attorney who specializes in Internet security and electronic commerce. She can be reached at efrye@juno.com.

Prediction: Billg will have to watch his back

Michael Schrage

Ritual "predictions" columns are perennial fun. Practically everyone reads them, but hardly anybody has the time, stomach or inclination to remember what was forecast. You've gotta love an industry running on Internet time! By the time we're all partying like it's 1999, 1998 will feel like three years ago.

There are, of course, the easy and obvious predictions that *should* come true even if they don't. For example, sometime this year HP and/or Sharp should introduce a PDA device that lets you easily scan text from a newspaper article into your handheld, annotate it with a virtual Post-It note and E-mail it to a friend.

Then there are the wildly irresponsible speculations that fuel hostile rumors, bitter recriminations and furious accusations of unprofessional behavior. Those are my favorite.

Let's just say that Andy Grove and the Intel gang are sick and tired of billg@microsoft.com calling the shots in the digital kingdom. They decide to use their silicon to stick it to Microsoft in a way that preserves the Wintel duopoly even as it extends Intel's reach ever deeper into the Internet telecosm. How so?

Maybe Intel announces that all of its microprocessors will be capable of running native Java. Because it's in silicon, Java gets the processing speeds programmers crave. Yes, Pentiums will still run Windows 9x and Windows NT, but from now on, they'll also support the Sun-standard Java.

What's billg gonna do? Tell Andy to buzz off? Buy Intel? Suddenly, Netscape, Sun, IBM and Oracle all have very good reason to play nice with Intel. Intel leverages its dominance in the silicon marketplace to make Microsoft a partner rather than a peer. Intel becomes the global standards-setter, not Microsoft. Microsoft's good news? Janet Reno goes *poof!*

Could it happen? Of course! Will it happen in 1998? Well, pretend you're Grove. Do you want to become more dependent on and interdependent with Microsoft? Or do you want to create other platforms for global innovation that better leverage your architectural and marketing expertise? Tough call, no?

But enough irresponsibility. For another sure-fire 1998 trend, we needn't look any further than Microsoft, Dell, Apple and Cisco — which aren't just selling themselves on the Web but are rebuilding their business models around it.

There's Microsoft under the antitrust gun for integrating Explorer with Windows to the point that soon it may not be clear where Windows ends and the Web begins. Federal courts will have to decide.

Over in Austin, there's Michael Dell selling more than $3 million of customized PCs each day over the 'net. Yes, that's less than the $1 billion in annual electronic commerce that Cisco is doing. But, hey, do you think that number will go down? Steve Jobs doesn't think so. Apple's foray into direct distribution seems to be going swimmingly.

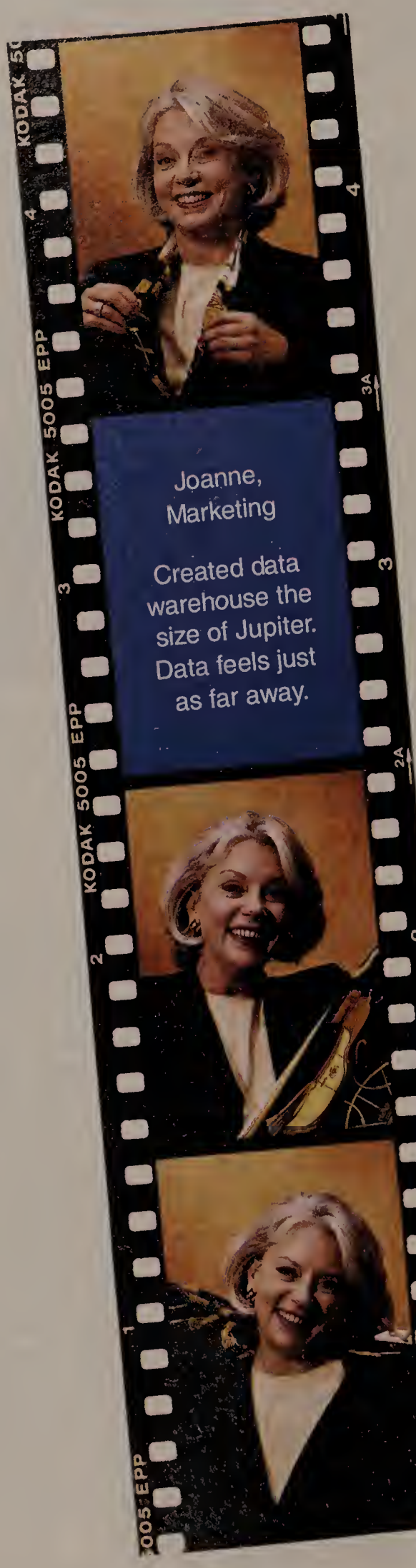


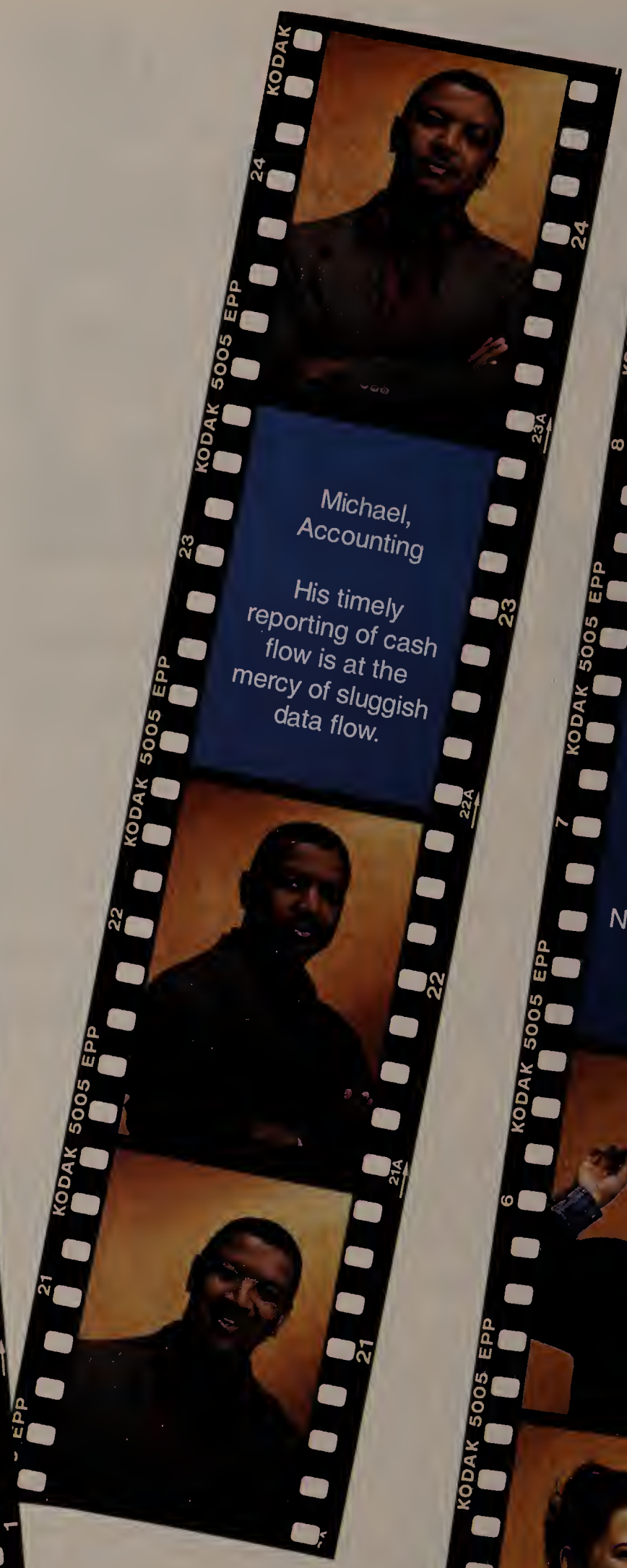
What if Andy Grove and Intel get sick and tired of billg@microsoft.com?

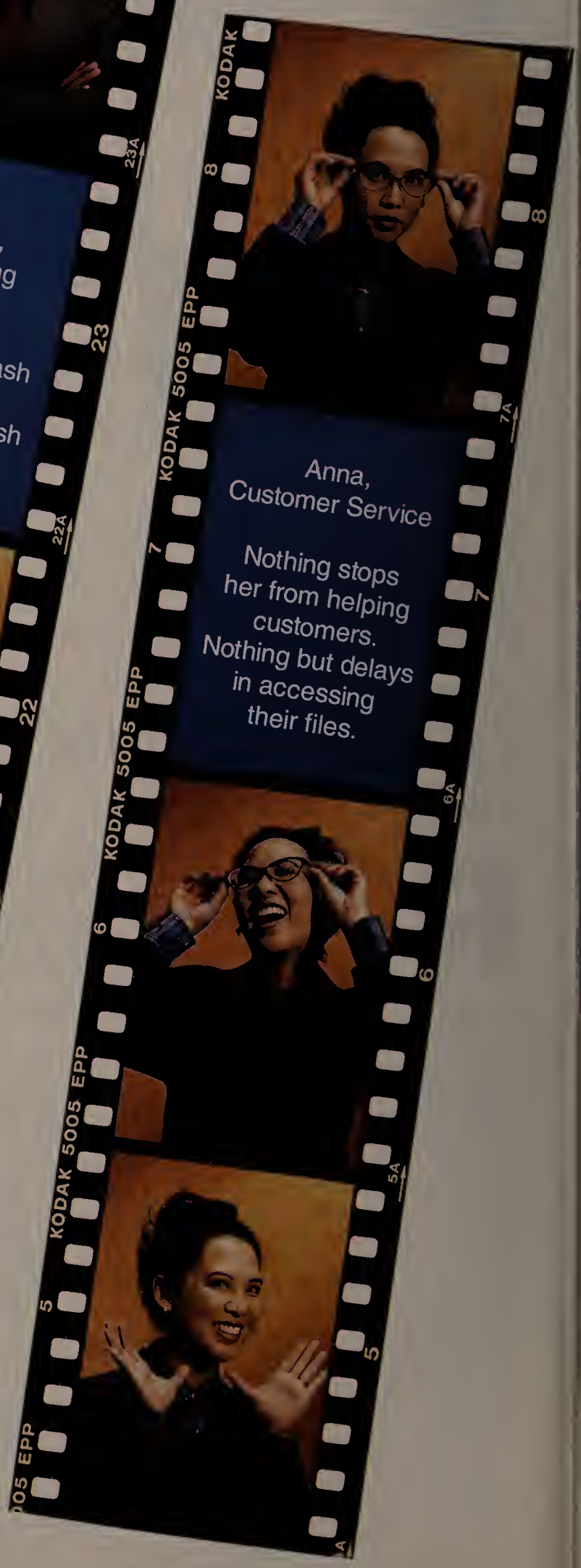
The trend is toward making the Web the dominant marketing medium for hardware, software and service distribution. The Web blurs distinctions among marketing, promotion, design and distribution. Customized PCs get bundled with leasing plans; diagnostics and services get bundled with online software distribution; IP telephony gets bundled with PDAs, cell phones and laptops.

In effect, the Web becomes the computational Cuisinart and digital deli that enables new forms of business bundling and packaging for these (converging) industries. For the past two years, the Internet has been about communications, information, community and data. Next year will redefine the Web as the medium for making money via marketing, distribution and co-design. □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*







www.ibm.com/storage/access



IBM e-business and Solutions for a small planet are trademarks of International Business Machines Corporation in the United States and/or other countries. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/OPEN Company Limited. Other company, product and service names may be trademarks or service marks of others. The individuals and situations presented are fictitious. Any similarities to an actual person or situation are merely coincidental. ©1997 IBM Corp

Now, there's a faster way to bring people and their data together.

Presenting IBM Serial Storage Systems

Today, everyone everywhere in your enterprise needs immediate access to crucial data. Welcome to the fast-paced world of e-business.™

With the proven performance of IBM Serial Storage Systems, you have a way to give it to them. And, you'll be helping your company get more out of critical applications like data warehousing, data mining and transaction processing.

IBM Serial Storage Systems use Serial Storage Architecture (an ANSI standard interface) to significantly outperform traditional SCSI disk systems. A two-way loop handles both inbound and outbound data streams simultaneously.

These open disk systems are designed to connect to UNIX® and NT servers, like HP, Sun, DEC, Compaq and IBM. And as your storage needs grow, capacity can be increased without taking your systems offline.

Visit www.ibm.com/storage/access to find out how your data can move as fast as your business.

IBM®

Solutions for a small planet™

Cisco Powered Network™

THERE ARE LOTS OF WAYS FOR YOUR BUSINESS TO ENTER THE INTERNET.



THIS IS THE DOOR
THE BUILDERS PUT IN.

The promise of networked commerce. Stronger customer relationships. The ability to rapidly respond to a constantly changing marketplace.

Where there's a reason to put your business on the Internet, there's a reason to rely on the expertise, strength and security of Cisco Systems – the company that brought the Internet to business.

Look for the Cisco Powered Network™ mark. It means your network service provider uses Cisco equipment – the common platform that lets your network work with any other network on the planet.

Which is why Cisco Powered Network service providers are uniquely equipped to make the Internet work for you, whether it's Internet access, ATM, frame relay or other data services.

To find out more, visit our website at www.cisco.com. And let a Cisco Powered Network service provider open up the Internet for your business.

©1997 Cisco Systems, Inc. All rights reserved.

CISCO SYSTEMS

The Network Works.
No Excuses.℠

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

RealMed claims system

Indianapolis-based health care claims firm RealMed Corp. announced plans to develop an online claims processing and payment resolution system. The RealMed network, being built through a joint effort with technology vendors, including MCI Communications Corp. and Digital Equipment Corp., will use smart-card technology from Gemplus Corp. in Montgomeryville, Pa. RealMed executives said they hope the system will reduce claims processing costs by as much as 30% after it is rolled out in the first half of next year.

Deal to manage apps

The Foxboro Co. in Foxboro, Mass., a maker of instruments for industrial process automation, signed a $1 million licensing pact with Software Emancipation Technology, Inc. in Burlington, Mass., to use its Discover software to automate and manage its enterprisewide software development processes.

Singapore acts on Y2K

Firms in Singapore are fixing their year 2000 problems, according to an Ernst & Young LLP survey. The report states that only 4.2% of Singapore firms are doing nothing about the issue, compared with 15% of firms worldwide.

WHERE IS SPENDS

Top three technology investments

Today

1. Communications infrastructure
2. LANs and office systems
3. Internet and online commerce systems

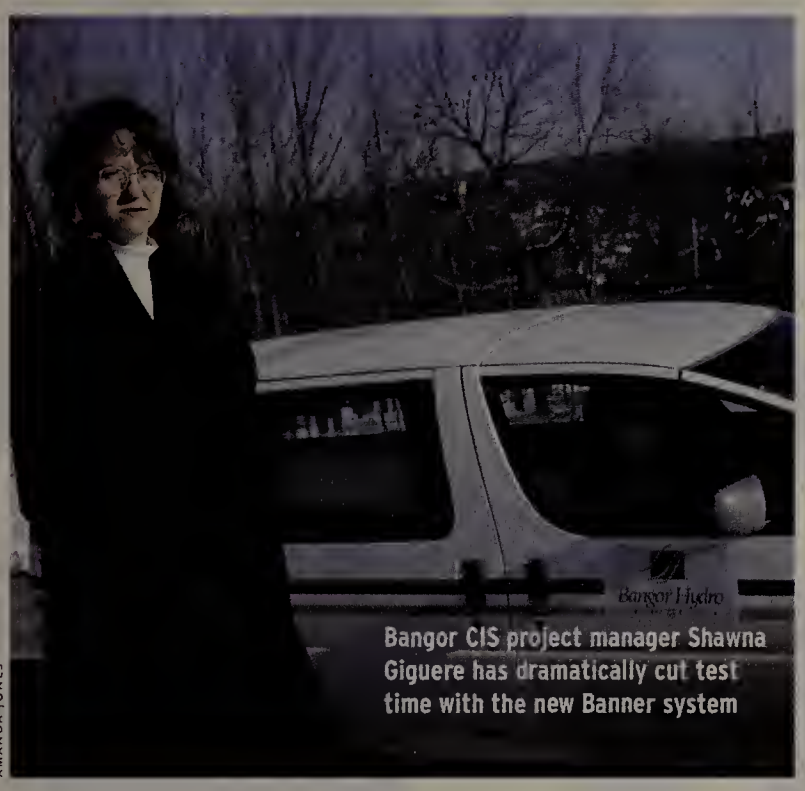
In 2000*

1. Internet and online commerce systems
2. Communications infrastructure
3. EDI systems

*Projected

Base: 150 IS professionals
Source: Xplor International, Torrance, Calif.

Utilities see rivals, step up service



AMANDA JONES

Bangor CIS project manager Shawna Giguere has dramatically cut test time with the new Banner system

By Thomas Hoffman

CUSTOMER SERVICE

WITH DEREGULATION stoking competition in the utility industry, customer service "will be the deciding factor for customer retention," said Bob Hansen, director of customer service at Con Edison Solutions, a wholly owned subsidiary of Consolidated Edison Company of New York, Inc. in White Plains, N.Y.

That's why many utilities are rushing to replace their decrepit customer information systems (CIS) — used by customer service representatives to assist customers with questions or problems — with client/server-based systems that are more flexible at accepting rate and other changes.

Because speed to market is critical for utilities replacing their customer service systems, many players are opting for off-the-shelf offerings from vendors such as SCT Utility Systems, Inc. in Columbia, S.C., that often can be installed in a few months.

In-house development efforts, modifications to existing systems or highly customized systems built by Big Four consultants such as Price Waterhouse LLP in New York can take years, said Carter Lusher, vice president and research director for customer service support strategies at Gartner Group, Inc. in San Jose, Calif.

Third-party systems from vendors such as SCT and Scopus Technology, Inc. in Emeryville, Calif., usually are much easier to modify than most legacy applications, user companies and analysts said.

Take Bangor Hydro Electric Co., for example. The Maine utility went live with SCT's Banner system in June. On its old 4381-based DOS/VSE mainframe system, Bangor Hydro needed 200-plus man-hours to make and test changes in electric rates.

With Banner, "it takes us two minutes," said Shawna Giguere, CIS project manager at the utility, which serves 110,000 customers.

Bangor Hydro now offers only electric services but is in

Utilities, page 36

Outsourcing requires up-front work by users

By Thomas Hoffman
ORLANDO, FLA.

A NEW REPORT CARD designed to measure the success of large outsourcing contracts has found that customers — by their own admission — should have done a lot more up-front research before they signed on the dotted line.

Nevertheless, 100% of customer CEOs interviewed for the report card said they would outsource again.

"The IDC/TBI IT Outsourcing Study," released at the DCI IT Outsourcing Conference held here earlier this month, was based on interviews with nearly 50 CEOs and chief information officers at customer companies and account managers for outsourcing vendors. The study looked at full-scope information systems outsourcing contracts valued at between $100 million and $3 billion from 1991 to 1996.

International Data Corp. (IDC) in Framingham, Mass., and Technology & Business Integrators, Inc. (TBI) in Woodcliff Lake, N.J., co-sponsored the report card and talked to executives at big outsourcing customers such as Xerox Corp. in Stamford, Conn., J. P. Morgan & Co. in New York and United Technologies Corp. in Hartford, Conn.

The realization of expected cost savings and management results of Xerox's $3 billion legacy systems management contract with Electronic Data Systems Corp. in Plano, Texas, has been "mixed," said Jagdish Dalal, former vice president of information management at Xerox. Dalal oversaw Xerox's outsourcing relationship with EDS for three years before he left the document company a year ago. He is now a partner at Price Waterhouse LLP in Stamford.

Dalal said the EDS contract let Xerox management focus more on developing applications to support new products and services. That focus contributed to Xerox's shareholder value, whereas cost savings from outsourcing didn't, Dalal said.

The IDC/TBI study found

Outsourcing, page 36

Harrison renews legacy apps

▸ *'Quick and dirty' project aids marketer's growth*

By Jaikumar Vijayan

SUBSECOND response times. The ability to handle 5 million calls per year. More than 200,000 transactions per week in the peak period just before Christmas. And the addition of more than $1 million to the bottom line annually.

Things sure are different at Harrison Direct, Inc. these days.

It has been a little more than 30 months since the Chattanooga, Tenn.-based direct

Harrison, page 36

IMPROVING TIMES

Company: Harrison Direct, a provider of direct marketing services to Fortune 1,000 firms

Objective: Improve call-response times and increase transaction volume

Approach: Retain investment in existing mainframe application code while moving to new client/server environment

Investment: $2.5 million

Result: Subsecond response times, increased transaction load, $1 million rise in profit annually

STOP
TECHN
MADI

"This won't work with that! That won't work with this! How do I even use this?!" Go ahead and scream. (We do.) The way we see it, computir
we've always looked at things from a simpler point of view: Open network computing. And that's led to ideas like our Java™ technologies. Th

©1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun Logo, Java and The Network Is The Comp

THE
OLOGY
NESS.

hould be as easy as eating, sleeping, and everything else you do without a second thought. Which is why
nore open computing gets, the easier it'll get. And the saner life will get. THE NETWORK IS THE COMPUTER.™

trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. www.sun.com

Sun microsystems

Utilities

CONTINUED FROM PAGE 33

the early stages of trying to set up a joint venture to provide gas in California. Even though a gas pipeline probably won't be built and available in Maine until 1999, Bangor Hydro will be ready to support new customers in the greater Bangor area with its $7 million customer service system, Giguere said.

Multiyear lead times for CIS projects "aren't acceptable at all," said Janet Haller, manager of customer information systems at Southern Indiana Gas & Electric Co. in Evansville. "We have to be able to make changes in weeks, not years."



Southern Indiana Gas' CIS manager, Janet Haller, wants billing charges on one statement

In Indiana, large industrial companies can shop for gas from different utilities. More widespread deregulation is expected by the end of next year.

For Southern Indiana Gas, that means being able to itemize billing charges on one statement, something that "was virtually impossible" to do by reprogramming its 30-year-old Cobol CIS, Haller said. The legacy system was so inflexible that Southern Indiana Gas had to maintain several accounts for large commercial customers, making it more expensive to process than one big account, Haller said.

Southern Indiana Gas is phasing in the Banner system through the third quarter of next year. The Unix-based system, which the company is installing on a Digital Equipment Corp. Alpha server, will spit out a single bill for customers whether they subscribe to cable television, electric or security services — services the utility hopes to offer in the future.

Still, a shift to client/server from decades of mainframe computing can be problematic, as Cincinnati Water Works discovered.

At the same time the utility was converting its homegrown Unisys Corp. mainframe system to a Hewlett-Packard Co. HP-UX-based Banner platform, it was having trouble trying to merge IBM AS/400 data from a sister utility, said David Rager, director of Cincinnati Water Works.

The utility solved the conversion problem by assigning four people to test small amounts of data. The team was able to match 80% of the customer accounts automatically but still had to match another 25,000 accounts manually, Rager said.

Nevertheless, the Cincinnati Water Works' $8 million investment in the Banner system has worked out well. Because the turnover rate of customer service representatives hovers at 20% to 25% in the utility industry, the city agency wanted a system that would help it reduce its training costs.

The customer service staff needed two weeks to learn the Unisys system but only three days to train on the Banner application, Rager said. □

Outsourcing support

As utilities create energy services companies to market gas, electric and other services, they will be faced with setting up separate infrastructures to support those nonregulated entities.

Some companies, such as Con Edison Solutions, have decided it is easier and more cost-effective to outsource their customer service operations than to build them from the ground up.

Under a three-year outsourcing deal reached in August, SCT Utility Systems will manage Con Edison's customer service operations, including its call center, credit-check services and bill processing. The cost savings Con Edison expects from outsourcing instead of building a customer service infrastructure "could be in the tens of millions," said Bob Hansen, director of customer service at the company.

Support from SCT will let Con Edison improve its customer service operation quickly, faster than most rivals that are just entering the market, Hansen said.

Under the contract, Con Edison will pay SCT based on the number of customers it ends up supporting once Con Edison begins marketing electricity next month.

"I'd love to say that in two or three years we'll have 25 million customers, but we just don't know that," said Hansen of the economics of the pay-by-the-drop outsourcing arrangement. On the other hand, if Con Edison ends up with only one customer, "that'll be one very expensive customer," he said.

SCT's SinglePoint Solutions group has to meet some pretty aggressive performance levels set by Con Edison. For example, 80% of all calls that enter the call center have to be answered in 20 seconds or less. That is about half the time most regulated utilities try to meet.

As more unregulated energy services companies are created by utilities, the demand for outsourcing services will increase, said Mark Shirman, an analyst at Cambridge Technology Partners in Cambridge, Mass. In some cases, larger services companies will offer outsourcing services to smaller ones. It's a good income stream," Shirman said. — Thomas Hoffman

Outsourcing

CONTINUED FROM PAGE 33

that there is "lots of CIO turnover" following mega outsourcing deals, said Susan Scrupski, an analyst at TBI. One bank in the study has had seven CIOs in the past seven years, Scrupski said.

Also, most of the customer executives interviewed said they are going through a continual process of renegotiating their deals. That stems from poor follow-through by customers entering the contract, the need to add or amend performance metrics or the need to react to changes in user companies' business needs, said IDC analyst Lisa Maio Ross.

FMC Corp.'s three-year LAN and desktop outsourcing deal with IBM "hasn't worked out too well," said Chris Slachta, outsourcing customer service manager at FMC's chemical products group in Philadelphia. Slachta, a conference attendee, said that is largely because FMC failed to identify the different functional needs of its accounting, human resources and other departments and spell those out to Big Blue.

Slachta said IBM officials have complained to her that FMC's lack of desktop and networking standards make it tough for them to support the company's environment. When Slachta approaches FMC's IS management on the standardization issue, "they don't want to hear about it," said Slachta, who joined FMC in September.

"I feel like the middle of an Oreo cookie," Slachta said. "It's a mess."

As the IDC/TBI study revealed, many outsourcing deals are laden with problems. But most are kept quiet because "no one ever talks on the record about problems with their deal," said Daniel R. Mummery, a partner at Milbank, Tweed, Hadley and McCloy, a New York law firm. □

Top three mistakes when investigating outsourcing

1 ▸ Ill-defined governance framework

2 ▸ Lack of performance measurement

3 ▸ Lack of comprehensive due diligence

Base: 48 corporate directors

Source: Joint study by International Data Corp., Framingham, Mass., and Technology & Business Integrators, Inc., Woodcliff Lake, N.J.

Harrison

CONTINUED FROM PAGE 33

marketing company implemented a migration from a mainframe environment to a Unix-based one.

Since then, Harrison Direct's ability to handle transactions has more than doubled, its call-response times have been more than halved, and the number of internal call center users has nearly tripled.

And the company has retained most of its investment in the original mainframe-based application code.

"It helped us take on new [clients] and grow our business in a way that was completely foreclosed to us prior to the change," said Joe Dresnok, president of Harrison Direct. The company has added three Fortune 1,000 companies to its client list, making 18, he said.

Privately owned Harrison Direct provides direct marketing, catalog and order-fulfillment services for several large clients, including The Coca-Cola Co., Hershey Foods Corp., the National Basketball Association and The Reader's Digest Association, Inc.

As far back as 1993, the high volume of consumer transactions generated by those services via both telephone and mail had begun to seriously tax the old IBM 3083 mainframe that handled most of Harrison Direct's processing work.

With the old system, customers sometimes had to wait on the phone for up to five minutes for Harrison Direct's batch processing system to accept their orders, Dresnok said.

Overall, it was a difficult situation. "We were being held hostage to the response time" of the mainframe, Dresnok said. After a particularly trying time during the 1993 Christmas season, the company decided to move its applications to a Unix-based online transaction processing system.

"Initially, we looked at a number of packaged software alternatives that would provide all the direct marketing functions in one package," Dresnok said. The company failed to find anything that met its customized application needs, he said.

Also, moving to packaged software would mean having to abandon the "several hundreds of thousands of dollars" the company had already invested in mainframe CICS applications, Dresnok added.

Harrison Direct decided to go with transaction processing and translation middleware from Phoenix-based UniKix Technologies. UniKix's software basically allowed IBM CICS/Cobol and DB2 applications to be ported to Unix systems with little change to the underlying application code.

UniKix provided a series of porting utilities, which allowed Harrison Direct's Cobol applications to be transferred between the mainframe and Unix environments. The software came with utilities that allowed source program migration, data file migration, a table manager utility and a language translator that converted CICS statements into a format compliant with Unix standards.

With UniKix, "you can use the same [application programming interface] that you use to build a CICS application to build a Unix application," said Nick Goll, an analyst at Meta Group, Inc. in Stamford, Conn.

"It's sort of a quick-and-dirty approach for moving applications from MVS to Unix," Goll said. □

The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

Microsoft certification

Microsoft Corp. has extended its certification program to include a specialization in Internet skills. The new credential certifies that the holder can customize, deploy and support the company's Internet Explorer 4.0, host a World Wide Web server and administer TCP/IP-based systems. Candidates must pass seven core exams and two electives. Current certified Microsoft professionals can add the credential by passing three to five additional exams.

Text standard pending

The World Wide Web Consortium has announced that the Extensible Markup Language 1.0 (XML) proposed recommendation is ready to be reviewed and voted upon by its 229-member organizations. The process is expected to take six weeks. XML is an easier-to-implement version of the Standard Generalized Markup Language text-processing standard. It allows structured data to be delivered over the World Wide Web.

Cyberdocs upgrade

Burlington, Mass.-based PC Docs, Inc. is shipping Cyberdocs 2.0, an upgrade of its World Wide Web-based document management client software. Version 2.0 lets users retrieve, create and search for documents using a Web browser. The Cyberdocs client works with the company's Docsfusion document server. Pricing starts at $30,000.

SHOPPING THE 'NET

What people are buying online

PC hardware and software	58%
Books and music	46%
Flowers, other gifts	26%
Tickets for travel	20%
Apparel, footwear	17%

Base: 300 online shoppers, multiple responses allowed

Source: Forrester Research, Inc., Cambridge, Mass.



www.window~seat.com

Online booking system helps America West keep up with rivals

By Laura DiDio

CHASING RIVALS and trying to slow the rising cost of doing business with travel agents, America West Airlines, Inc. earlier this year began selling tickets on the World Wide Web.

Tickets sold on the 4-month-old site cost America West 70% less than those sold through travel agents and are never lost or stolen.

And the site lets consumers book reservations themselves, usually in less than two minutes, said Bill Spilman, America West's senior director of product distribution.

Phoenix-based America West, with 11,000 employees and annual revenue of $1.7 billion, is one of the nation's top 10 airlines.

The airline flies to 90 destinations and specializes in low-cost fares mainly to leisure travelers, said Chris Hartman, the airline's distribution analyst.

Online ticket bookings "are increasing 50% each month, and our revenue is up 10%." – Chris Hartman, America West

"Southwest Airlines and United Airlines were the first [airlines online], and now just about everyone is doing it. Airlines can't afford not to do business on the Web. It saves them money and saves consumers time," said Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston.

"It's an absolute necessity for any airline that wants to stay competitive and provide customers with the latest information on available flights and special discount fares any time of the day or night," Spilman said. "Doing business over the Web lets us cut the price of generating a ticket to about $4. By contrast, it costs us about $15 to book a passenger reservation on our 800-number phone lines."

Hartman said Web-based

Online booking, page 40

CHARITIES ONLINE

Nonprofits find funds, help on Web

By Wylie Wong

IF APPLE COMPUTER, INC. and Barnes & Noble, Inc. can look at the Web and see dollar signs, the American Red Cross figures it can, too.

"People motivated by a current disaster can instantly donate and send money" via the Web, said Jane Pratt, manager of the Red Cross Web site (*www.redcross.org*).

With Internet commerce on the rise, nonprofit organizations and charities are flocking to the fledgling medium.

SEEKING VOLUNTEERS

Their goals, however, aren't just to collect donations. The World Wide Web also is a cost-effective way to find new volunteers and educate people about an organization's mission.

To commemorate World AIDS Day, for example, The NAMES Project Foundation earlier this month posted the AIDS

Charities, page 40

Calif. utility's Web site fuels energy decisions

By Carol Sliwa

CUSTOMERS CAN BUY just about anything over the Internet, so why not energy?

To deal with competition creeping into a deregulated market, the largest natural gas distributor in Southern California has launched the "Energy Marketplace" World Wide Web site to help midsize and small commercial/industrial businesses and residential customers weigh their purchase options.

The Web site was designed to satisfy requirements by the California Public Utilities Commission that Southern California Gas Co. (SoCalGas) expand its customer choice program to introduce competition into the market. But the company also wants the site to attract new customers.

HOW IT WORKS

Customers simply log on to *www.energymarketplace.com*, answer some questions about their energy needs and set a deadline for the gas suppliers to reply. When the time is up, customers can check out the bids, mark the winner and wait for the supplier to call them on the telephone.

The gas comes from suppliers that, for the most part, are in other states and Canada.

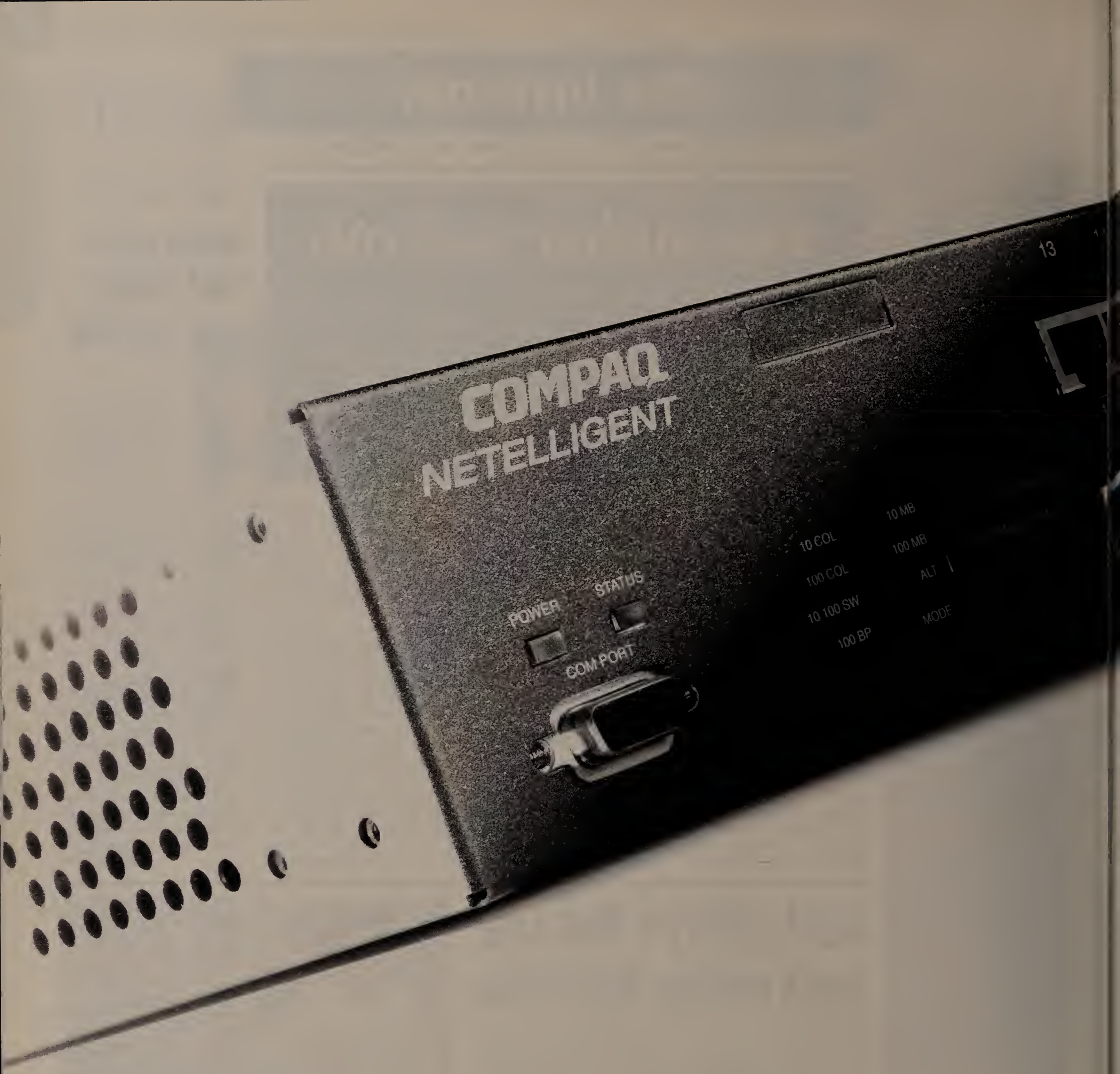


SoCalGas' Rollence Patugen, David Wong, David McBride and Steven Durflinger (from left to right) needed just a few months to get the Energy Marketplace site up and running

Before deregulation, SoCalGas, the monopoly distributor, chose the suppliers. Now, customers must select suppliers in much the same way that they select a long-distance telephone company.

"We wanted to facilitate customer choice by reducing transaction costs for suppliers and by providing an efficient means for customers to link to suppliers," said Eric Baty, business information manager at SoCalGas in Los Angeles.

Utility Web site, page 40



©1997 Compaq Computer Corporation. All rights reserved. Compaq registered U.S. Patent and Trademark Office. Netelligent is a trademark of Compaq Computer Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies.



ONE: INSTALL DUAL-SPEED HUB.

TWO: KISS YOUR CONSTANT TRIPS TO THAT WIRING CLOSET GOODBYE.

Introducing the industry's first port-level auto-sensing dual-speed stackable hub. 10Mb/s? 100Mb/s? It doesn't matter. We won't make you choose. Flexible migration is but one of the advantages of the Compaq Netelligent 2724 and 2824 hubs. Plug-and-play installation versus plug-and-replug is another. And, like all standards-based Netelligent systems, these hubs make for easy integration with whatever systems you have in your network.

Still, what's a conversation about advantages if you don't talk about money, right? To start, our hubs reduce labor costs. Because of integrated 10/100 connectivity, our hub converts your wall outlet into a utility. So you don't have to visit the wiring closet every time someone moves or upgrades to a higher speed. It also preserves your 10Mb/s investment while allowing for growth to 100Mb/s, which, in effect, also helps you future-proof your network. And it costs about the same as a 100Mb/s-only hub. In the end, you have a hub that does the work of two — plus the bonus of SNMP, RMON and Compaq Netelligent Management Software. Because Compaq is the world's number one computer seller and is committed to being the leader in innovative Fast Ethernet solutions, we offer a full range of hubs, switches and NICs for virtually every size network.

Combine these with Compaq PCs and servers and you not only have a one-two hub installation, you have a one-two knockout-punch network.

For more information about the entire family of Compaq Netelligent products, visit us at www.compaq.com/products/networking/ or call 1-888-650-5055.

COMPAQ

Charities put Web to good use

CONTINUED FROM PAGE 37

Memorial Quilt — all 43,000 panels of it — on the Web (*www.aidsquilt.org*).

"It's an incredible tool to help us spread the message that AIDS is not over, and we still have a lot of work to do," said Scott Croft, online systems administrator for the NAMES Project. Because people under 25 have the highest incidence of HIV infection, many high school and college teachers access the NAMES site to teach kids about safe sex, Croft said.



In times of disaster, visitors to the Red Cross Web site can instantly donate money

The Web helps bring the message home to people who wouldn't otherwise see the quilt, Croft said.

"I was awestruck by the site and sat here quietly in tears," read one recent electronic-mail message to Croft from a Web surfer.

For-profit companies can afford to sink millions in to a Web site, but cash-strapped charities often seek volunteers and donations to design and maintain their sites.

The U.S. Marine Corps Reserve's Toys for Tots Program (*www.toysfortots.org*) found its angel in the form of a Java book author. About two years ago, Aaron Walsh, president and CEO of Mantis Development Corp., a Boston software development company, decided that he needed to create a Web site that uses Java. He wanted to use it as an example for his book *Java for Dummies*, published by IDG Books, a sister company of *Computerworld*.

The software company spends about $100,000 per year to maintain the Web site, said Barbara Mikolajczak, Mantis' vice president of operations.

Earlier this year, Mantis redesigned the site to commemorate the 50th anniversary of Toys for Tots. Walsh sometimes spends several days a week updating the site with the names of Toys for Tots coordinators throughout the country.

This holiday season, Mantis is marketing the site by getting free banner ad space on the home pages of Internet search engines such as Excite, Inc. and Yahoo, Inc.

As a result, the Toys for Tots site generates about 1 million hits during the holiday season in December and about 100,000 per month during the rest of the year, Mantis officials said.

The toy donation program, which collects 8 million toys per year to be distributed to needy children, wouldn't have had a Web site without the volunteer work, said Retired Major Bill Grien of the Toys for Tots Program.

And the NAMES Foundation couldn't have launched its online AIDS Quilt without grants. Sun Microsystems, Inc. donated a server; Informix Software, Inc. donated the database software; and Masterlink, Inc., a Bay Area Internet service provider, hosts the site.

LAST BLAST OF GOODWILL

Charity officials say they generally receive more donations during the holiday season — partly because people are in a giving mood and partly because December is the last chance for a tax write-off.

"We get a little burst toward the end of the year," Pratt said.

Web receipts range from a "handful" of donations at some charities to about $100,000 per year at the Red Cross.

As a result, some nonprofits add a holiday flair to their Web sites. The Volunteers of America recently launched a Sidewalk Santa Web site where children can write letters to Santa (*www.sidewalksanta.org*).

"It's a fun place where kids can go and people will hopefully be drawn into the warmth of the site and the stories being told about the program," said spokesman Steve Abbott. □

NEW PRODUCTS

NOVERA SOFTWARE, INC. in Burlington, Mass., has announced Epic 2.0, an all-Java application development and server platform that integrates with existing database and host-based applications.

The tool is used to build and manage pure-Java enterprise-level applications that are accessed via World Wide Web browsers. The new version supports the Common Object Request Broker Architecture. It costs $150 per concurrent user.

Novera Software
(781) 270-4422

FUJITSU SOFTWARE CORP. has announced NetCobol, software to deploy Cobol applications on Web-based systems.

According to the San Jose, Calif., firm, the Cobol compiler can generate pure Java code from existing legacy Cobol programs.

It costs $750.

Fujitsu Software
(408) 432-1300
www.fsc.fujitsu.com

RADVIEW SOFTWARE, INC. has announced WebLoad 2.0, a performance evaluation tool for Web applications.

According to the Mahwah, N.J., firm, the tool lets users test the efficiency of World Wide Web sites by simulating conditions such as traffic loads in the thousands.

Pricing ranges from $2,500 to $25,000 depending on the number of simulated users.

RadView Software
(888) 723-8932
www.radview.com

Online booking

CONTINUED FROM PAGE 37

bookings account for 0.4% of America West's total revenue, though company officials expect that figure to rise dramatically in the next two years to at least 10% of total revenue.

Hartman said the lure of online ticket reservations has become so attractive to consumers that America West is "doing about $200,000 a week" in Web-based sales with very little advertising. "The bookings on the Web site are increasing 50% each month, and our revenue is up 10%," Hartman said.



America West's site has a FAQ button and instructions for checking fares and flights

The Effortless Ticketing Online service is based on Attachmate Corp.'s Extra Airline 1.1 customized airline reservations software running on Microsoft Corp.'s Windows NT and BackOffice products partly for their features and partly because Microsoft, which aggressively campaigned for the airline's business, sweetened the deal. "We became a Microsoft beta user and in exchange we got discounts on NT, BackOffice and Microsoft technical support," Spilman said.

The site will let users check flight information and book reservations. The Transaction Server 1.1, running in the background, performs the necessary funds, billing and address verification prior to completing the transaction, Spilman said. "The process can usually be completed in under two minutes compared with five to 10 minutes [via the telephone]. And best of all for the consumer, there's no more waiting on hold," he said.

"And the Transaction Server lets us handle large volumes — we get 40,000 hits every day," he added. □

Utility site fuels decisions

CONTINUED FROM PAGE 37

The Web site also provides a comparatively low-cost way for suppliers to look for customers, Baty said. Most consumers aren't familiar with natural gas suppliers, so suppliers generally had to spend between $200 and $300 on sales calls, faxes, mailings and advertising to attract one customer, Baty said.

"This is going to get it down into the $10 or $30 range for accessing those customers," Baty predicted. "That means lower prices for end-use customers because of the lower transaction costs."

SoCalGas also benefits. If customers can buy gas more cost effectively, gas prices drop and gas usage becomes a more attractive option.

"An Internet-based [request for proposals] system is the easiest way to let the largest number of customers test their options and connect with bidding suppliers," said Barton Taylor, a senior analyst of energy industries at Boston-based Aberdeen Group, Inc. "It also gives SoCalGas a wealth of information about customers' energy needs and usage patterns, as well as an early lead in establishing itself as the interface for energy service requests."

SoCalGas makes money from the site by charging gas suppliers a monthly subscription rate to be listed with its service.

Three developers and two staffers from the business side of the house needed less than three weeks to get a prototype of the site working. They needed just two months more to get it ready for production using NetDynamics, Inc.'s application development tools, said Steven Durflinger, project manager at the Energy Marketplace site.

On the back end, the group used Web servers from Netscape Communications Corp. and an application server from NetDynamics running on a Unix server from Sun Microsystems, Inc., with a Sybase, Inc. database. □

FROM THE EDITORS OF

COMPUTERWORLD

VOLUME 2, NUMBER 9
DECEMBER 22, 1997

Intranets

A MONTHLY LOOK AT WEB DEVELOPMENTS BEHIND THE FIREWALL

'Instant' Intranets

Shrink-wrapped products can get you an intranet for under $5K. Just be sure what you need.

By Alice LaPlante



Chris Stevens is delighted with the popularity of his intranet. And as manager of network and technical services at Portland, Ore.-based Lewis & Clark College, he's happy to help users design and build departmental Web sites. But he's also concerned about the volume of requests — and the strain on his already stretched information systems support staff.

Enter the "instant intranet."

For professors, students and administrators who want to post a discussion group question or disseminate course materials online, Stevens is pushing WebZerver, a plug-and-play intranet server about the size of a modem. Sold by Microtest, Inc., the hardware device plugs directly into the campus Ethernet network. It has intranet software already installed. Users design their own applications. They do their own administration and maintenance. And, most importantly, they don't need to know HTML or HTTP.

"Naturally, we're always here to help. If something con-

INSIDE ▪ RENEGADES WELCOME, PAGE 2 ▪ A NICHE AT NASA, PAGE 7 ▪ PRODUCT SAMPLER, PAGE 10

'INSTANT' INTRANETS

Continued from page 1

nects to our network, we'll support it," Stevens says. "But our hope is that WebZerver will make our users pretty independent of us."

Stevens and WebZerver are not alone. As the 1997 intranet market is expected to double over 1996, from $6 billion to $12 billion, according to Zona Research, vendors of all shapes and sizes are jumping into the departmental niche. Their "instant intranets" are targeted at the smaller group — or even entire company — that wants a quicker, easier, cheaper intranet than has been available until now. "The intranet novice market is wide open and virtually untapped," says Barbara Ells, an analyst at Zona Research.

Various options are emerging:

- Stand-alone units with proprietary operating systems that attach directly to the corporate network, such as WebZerver, Compact Devices, Inc.'s Twister, Webtronics, Inc.'s WebBox or Bay Networks, Inc.'s Instant Intranet. Cost: $1,295 to $2,700 (see page 10).
- Software packages that can be installed on network servers or desktop PCs and integrated into larger Internet or extranet efforts. Prices here: mostly in the $2,700 to $5,000 range.
- Upcoming services from telecommunications company/Internet service provider/software company partnerships that offer soup-to-nuts intranets for $10 to $20 per user. MCI has announced Enterprise Network Solutions in conjunction with Digital and Microsoft; Lotus and Netscape now have packages; expect similar offerings from the likes of AT&T, Oracle and Sun.

Most of the hardware and software offerings, however, are not ready-made solutions for all issues. For some, expandability might be a problem. Others aren't for novices. Indeed, says Tim Sloane, director of Internet research at Aberdeen Group, Inc. in Boston, most of these products will go toward supplementing, not replacing, corporate intranet efforts. As they do with Stevens, they will increasingly allow IT managers to off-load development of important but non-mission-critical intranet applications to users.

COVERING CONTENT

Most of the readymade products promise a lot: to provide most common intranet functions, from document sharing to scheduling modules and other collaborative tools; to translate ordinary word processing or spreadsheet files into an HTML format without knowing a word of HTML; to easily create links via Open Database Connectivity middleware or gateways to SQL databases including Sybase, Informix and Oracle.

"IT doesn't want to be in the content-creation business," explains Andrew Dixon, products manager for Microsoft's Office. Microsoft has just released the second version of its 60-minute Intranet, which consists of step-by-step instructions and site templates. "We're seeing a demand for intranet tools that free IT from getting involved in simple workgroup applications." The 60-minute Intranet, designed to help novice users build their own intranet applications, requires Microsoft's FrontPage and Office applications suite and can be downloaded free from Microsoft's Web site.

Until now, intranets have been touted as cheap — International Data Corp. puts the average implementation at $25,375 — and easy. But in fact, they have required a great deal of technical expertise, notes Rich Newman, director of technology for the syndication division of First Chicago Capital Markets.

That company's intranet projects usually require knowledge of HTML, HTTP and Java, not to mention understanding how to connect to back-end databases — both SQL-based and legacy systems alike — and communications protocols, Newman says.

There are often political issues, too. "You've got all these decisions to make: Who will own the product? Who will own the server? Who will maintain it? Who will be responsible?" says Roy Lee, general manager of Lextra Communications, an Internet consulting firm based in Windsor, England.

That's where intranet appliances come in.

Lee chose Webtronics' WebBox, a plug-and-play intranet now available in Europe and soon to be sold in the U.S. "The key thing, for my clients, is that they don't have to worry about installing and configuring a Windows NT or Unix server. The box comes with its own operating system and the Web server software installed and is ready to go," Lee explains. Yes, it's truly that easy, he says. The box requires a TCP/IP network and an IP address, but that's it.

Political issues, which Lee faced in a previous job as an IT manager at a

Renegades Welcome? It's True.

Just ask the IT folks at Siemens Network Integration Service Group in Boston whether they mind if user workgroups build their own intranet applications. You'll get an emphatic "no."

Indeed, the company plans to standardize on IntraNetics97 — a shrink-wrapped suite of intranet functionality from Cambridge, Mass.-based IntraNetics, Inc. now in beta-testing — to encourage that very activity.

"This product will be excellent for any department, or a small to medium workgroup, that wants to get an intranet up quickly," says Bruce Kiley, a senior networking engineer

ILLUSTRATIONS BY BRIAN RASZKA

"blue chip" UK company, could be alleviated by WebBox as well. When the IS group doesn't have the time — or funds — to listen to individual departments' needs, a product such as WebBox makes it easy for a department to take the intranet initiative without affecting the enterprise, he says.

KEEPING IT SIMPLE

Ease of maintenance is what First Chicago's Newman was after.

His fairly sophisticated corporate intranet is already enterprisewide; employees use it to publish and share financial, human resources and customer information. Yet to solve one particular information-sharing challenge, he turned to a shrink-wrapped application called Net-It Central rather than to more traditional development routes.

Net-It allows Newman's staff to disseminate source documents containing internal research, industry analyses and customer reports to all division employees. It's not that this couldn't have been done as a standard Web page on the existing intranet, but "what interested us was the ease of maintenance Net-It offered," Newman says.

To get started, Web administrators merely indicate any directory containing virtually any type of document — word processing, database, spreadsheet or graphics — on any PC. Net-It replicates that directory as a Web page in which the documents are available in their original format to anyone who wants to access them.

"It's not HTML. It's not just a way of publishing data. Here our users actually have direct access to the source documents," Newman says.

This makes maintenance almost nonexistent, he says, because the source documents *are* the intranet site. Changes to the original source documents automatically result in changes to the Web site. In that sense, this is an excellent supplement, not replacement, intranet product that "dovetails quite well with our existing intranet strategy," he explains.

There are limitations to Net-It, Newman admits. It isn't an application development environment. "Nor is it a tool to build the kind of application in which a user can make requests or initiate actions," he says. What it does is allow up-to-the-minute access of source documents for collaborating on group projects, he says.

At Santa Clara, Calif.-based networking giant 3Com Corp., the 100 employees who make up the Multi-

Continued on page 6

at Siemens AG. "Every department will have the ability to publish whatever information they want on their own Web server. They'll really be empowered."

Because IntraNetics adheres to Web standards, there's no danger that incompatible islands of intranet applications will proliferate, Kiley says. "Each department can say, 'This is how our piece fits into the larger corporate information world.' There's no conflict."

According to Barbara Ells, an analyst at Zona Research in Redwood City, Calif., this attitude is typical. She said she doesn't see corporate IT shops fearing problems with "renegade" intranets. For starters, the "instant intranet" products adhere to already established industry standards, she says. Most corporations already make it clear what hardware, software and networking products fit into the corporate infrastructure.

And perhaps most important, Ells estimates that by the end of 1998, all major networking vendors will announce much more sophisticated remote network management products that will make managing even a plethora of distributed Web servers much easier.

"We're finding that Internet initiatives, although decentralized, tend to be monitored from the top," Ells says. She hears chief information officers telling users, "Here's our corporate intranet, here are some ideas of what you can do with it, here are approved tools and devices. Go to it."

"IT is making sure that domain names, communications protocols and database types are consistent," she says. "Management learned certain lessons well during the PC revolution. Other than that, they're allowing a great deal of user autonomy."

— ALICE LAPLANTE



"THIS PRODUCT will be excellent for any department . . . that wants to get an intranet up quickly."

BRUCE KILEY, SENIOR NETWORKING ENGINEER, SIEMENS AG

PHOTOGRAPH BY JAY REED



©1997 Novell, Inc. All rights reserved. Novell is a registered trademark and NDS and Rock the Net are trademarks of Novell, Inc in the United States and other countries. *Microsoft and Windows are registered trademarks and BackOffice, Exchange, and SQL Server are trademarks of Microsoft Corporation



FINALLY, WORRY-FREE NT.

Seems like everybody and his uncle is trying to install Windows* NT applications.

And when they do, a few surprises will be waiting for them. Because NT is a proprietary domain-based operating system.

So it doesn't integrate as seamlessly as promised. And it can require users to chuck their existing network investment.

But now you can deploy NT without having to deal with its idiosyncrasies.

You can turn it into an enterprise-capable open system supporting hundreds of third-party applications.

Manage access to and deployment of Microsoft* BackOffice* applications such as Exchange* and SQL Server.*

And lower the cost, complexity and redundancy of your entire network.

[NDS™ for NT makes it possible.]

NDS avoids the old-fashioned straight jacket of NT domains

by supporting heterogeneous environments of different platforms, different protocols, different people in different places.

NDS makes NT better. And one less thing to worry about.

Internet, intranet, extranet—anynet—the name of the net is Novell.

www.novell.com/NDS

Novell®

NOVELL DIRECTORY SERVICES

'INSTANT' INTRANETS

Continued from page 3

media Initiative Department are using Radnet, Inc.'s prepackaged intranet suite, called Webshare, to share documents and participate in online discussion databases. "This allows us to collaborate on ideas as well as problem-solving, even if we're not all in the same location," says Tania Snider, a member of the multimedia group who spearheaded the intranet effort.

Because Webshare can be integrated with other intranet or messaging applications, Snider has been able to provide a gateway to Lotus Notes electronic mail so group members can be automatically notified when new documents or related discussions have been added. This allows employees to use standard Web browsers, rather than traditional database queries and searches, to access important information.

Why go with the prepackaged route? "It's always best to use resources that are already available rather than reinventing the wheel," Snider says.



BUYER BEWARE

But even with all the purported benefits of Web appliances and ready-made software, knowing what you're getting is a must.

The hardware-and-software packages tend to be fairly complete, offering everything from the hardware to the Web server software to browser licenses. But the "intranet in a box" software suites vary: Some have Web server software or let users pick the brand they want. Others offer little more than traditional groupware in Web-enabled form. That means they might be appropriate for companies that already have intranets and want to encourage grassroots application development. But they're not truly plug and play and therefore not for true novices or workgroups without access to technical resources. So it's "buyer beware," Aberdeen's Sloane warns.

"You need to know what your needs are and investigate which products actually deliver those needs in a cost-effective way," he says. For example, it might not make sense to purchase a hardware/software package if "you have the spare server horsepower already sitting in the office," Sloane says.

Likewise, if you have a reasonable infrastructure — Web server software, browsers, etc. — already in place, you

Should You Consider an Instant Intranet?

■ **DO YOU HAVE more requests for intranet applications than your IT staff can handle?**

■ **OF THIS BACKLOG, are many of the applications low priority because they address the needs of a small workgroup or department?**

■ **WHAT FUNCTIONALITY do these users require? Do they simply need to publish information? Collaborate on source documents? Or do they need more sophisticated "interactive" applications?**

■ **IS THERE SOMEONE in the workgroup or department willing to act as "point person" for the intranet application when content management and maintenance is required? Is this workgroup willing to take responsibility for backup?**

■ **HOW LIKELY IS IT that you will want to migrate this application to a higher organizational level so a larger user population can access it?**

■ **DO YOU HAVE corporate hardware, software and network standards that users are aware of and (mostly) adhere to?**

■ **DO YOU HAVE excess corporate Web server capacity to hold additional intranet sites? If not, are desktop PCs adequately powerful to coexist as departmental Web servers?**

wouldn't need the more complete software packages. "If you're simply looking for some sort of groupware to sit on top of an existing network, you'd want one of the less comprehensive packages," he says.

But if you're starting from square one, be advised that installing or customizing a shrink-wrapped application can require some technical help. "You may have to outsource certain programming needs to outside consultants. That can be costly," 3Com's Snider notes. But it can still be "much less expensive than developing your own application from scratch."

Using a third party to manage Web directories, support users and keep the Web server functional can also make sense. "It could be a very smart use of IT dollars to simply outsource all that to an ISP," Aberdeen's Sloane says. And the products and services from which to choose will only increase, analysts say.

WHAT IT COMES DOWN TO

Of course, as with any outsourcing decision, with intranets it's a question of control and who has it. Web appliances and plug-and-play software put that all in the users' hands, along with the decision of what will meet the needs, fit the budget and offer the potential their organization desires.

Paul Alvarez, a software applications specialist at a network design firm in San Diego, downloaded Microsoft's free 60-minute Intranet so he could leverage the Office97 investments of his company, GTC Systems, Inc. He notes, "We're still learning about intranets and how we can benefit from the technology. The nice thing about the packaged kits is that we get a variety of premade templates that we can modify to meet our own needs.

"At the very least, you get some good ideas," he says. "And it certainly saves time. Which is always appreciated."

LaPlante is a freelance writer in Woodside, Calif.

A Niche at NASA

WHAT'S ONLINE

For questions to ask your intranet vendor before you buy, and for an expanded version of our product review, visit
www.computerworld.com/intranets

Most companies are finding that "instant intranets" work best when they supplement, rather than replace, other intranet efforts.

At NASA, the Applied Information Technology (AIT) group is evaluating Oblix, Inc.'s IntraPower Suite to see how the software suite of intranet applications could streamline collaboration efforts within workgroups.

"So far, so good," says Dick Tuey, the former head of AIT who's now contracting at NASA as an Ames associate.

Currently, the AIT group is using IntraPower to keep track of its ongoing technology development projects. Previously, "we sent a lot of E-mail back and forth when constructing our weekly progress reports," Tuey says. Now users can retrieve up to three months of weekly reports to, for example, prepare for more formal reviews by senior management.

They can also collaborate online to create PowerPoint displays because IntraPower allows for document sharing. "When it's time to make a presentation, we run the most recent version of the group PowerPoint presentation right off the intranet," Tuey explains.

NASA is spearheading use of IntraPower in other federal agencies as well; in one case, it will be used for a distributed intranet-based data repository capable of tracking government grant proposals, applications and evaluations, but for those seeking an enterprisewide intranet package, IntraPower isn't the product to buy, Tuey stresses. NASA uses it in conjunction with a suite of intranet tools it developed in-house.

Still, he says, "because of the short learning curve, we don't have to worry much about support or maintenance. It's a nice package — ready to use off the shelf — and it doesn't take a walking army to keep it up and running." IntraPower costs $10 to $20 per user, according to the company.

— ALICE LAPLANTE



"BECAUSE OF THE short learning curve, we don't have to worry about support or maintenance. It's . . . ready to use off the shelf."

DICK TUEY, AMES ASSOCIATE AND NASA CONTRACTOR

PHOTOGRAPH BY ERIC MILLETTE



©1997 Novell, Inc. All rights reserved. Novell is a registered trademark, and Novell BorderManager, NDS and Rock the Net are trademarks of Novell, Inc. in the United States and other countries.



INTRODUCING NO-SWEAT NET.

The Internet is wonderful—and worrisome.
How can you ensure it's a productive tool and not a seductive distraction? How can you protect confidential information from intruders?
How can you maximize its business potential while minimizing your financial risk?

[Novell® BorderManager™ makes it possible.]

BarderManager, Navell's newest Internet product,
is the industry's first integrated family of directory-based network services that manages, secures,
and accelerates user access to information at every network border—
the point where any two networks meet.
Thraugh tight integratian with NDS™—the world's leading crass-platform directory service—BorderManager
can decrease the cost of managing your intranet while safely extending your business out to the Internet.
And what's that mean? Freedom.
The freedom to leverage your existing hardware and software investments, reduce the cost of managing your corporate networks,
and increase bottom-line productivity up to 100%! Any network, any platform, any browser,
BorderManager is the complete solution to make the Internet—and everynet—make sense for yaur business.
And now you can try it before you buy it.
Cantact your participating Novell reseller far a 45-day FREE TRIAL ar visit aur Web site for details. Quantities are limited.
www.novell.com/bardermanager

Novell®

BORDERMANAGER

PRODUCT SAMPLER

Hardware/Software

BAY NETWORKS, INC.'S BAYSTACK INSTANT INTRANET
Santa Clara, Calif. (800) 784-4638
www.instant.net
$2,495 device connects your PC LAN to the Internet through a single IP address. Scalable to100 concurrent user applications per stackable box. Includes Internet applications; just needs an account with an ISP.

COMPACT DEVICES, INC.'S TWISTER
Campbell, Calif. (408) 255-4200
www.devices.com
$1,295 plug-and-play hardware and software product designed to host small intranet sites. Has proprietary operating system. Comes with templates for creating Web sites; allows for document sharing and content publishing.

WEBTRONICS, INC.'S WEBBOX
Contact: Cutting Edge Technologies, Laguna Hills, Calif. (714) 582-1946
www.wtnx.com
$1,295 plug-and-play hardware and software Web server for small businesses, branch offices and workgroups. Bundled with Claris Corp.'s HomePage authoring software.

Software

INTRANETICS 97
Woburn, Mass. (888) 932-2600
www.intranetics.com
Ready to run intranet software package, priced at $4,995 (or $7,495 for version with Web server software), includes 17 prepackaged applications and all software components for getting an intranet up and running: browser license, SQL database and E-mail server.



MICROTEST, INC.'S WEBZERVER
Phoenix (602) 952-6400
www.microtest.com
$1,595 plug-and-play hardware and software intranet server for publishing, organizing, searching and retrieving information for workgroups or departments. Allows for document sharing and threaded discussions for collaborative work.

LOTUS DEVELOPMENT CORP.'S TEAMROOM
Cambridge, Mass.
(617) 577-8500
www.lotus.com
Prepackaged E-mail and intranet applications ($15 to $20 per user) sold with ISP services: everything from server space to support to maintenance.

MICROSOFT CORP.'S 60-MINUTE INTRANET KIT
Redmond, Wash. (425) 882-8080
www.microsoft.com
Free software designed to work with Office97 and FrontPage97, this includes four starter site templates that allow workgroups to quickly put up departmental intranets to publish and retrieve data. Downloadable.

NET-IT SOFTWARE CORP.'S NET-IT CENTRAL
San Francisco (415) 551-0600
www.net-it.com
Web-based groupware package, priced at $4,995 or $6,995 (professional version), allows sharing of source documents in their original form. Includes templates for standard intranet sites. Can be integrated with HTML forms and other custom intranet applications.

NETSCAPE COMMUNICATIONS CORP.'S VIRTUAL OFFICE
Mountain View, Calif. (650) 937-2555
www.netscape.com
Combines Netscape's SuiteSpot E-mail and Concentric Network Corp.'s groupware intranet applications. Concentric manages all aspects of operating the Web server at a remote site.

OBLIX, INC.'S INTRAPOWER SUITE
Cupertino, Calif. (408) 524-9700
www.oblix.com
Suite of software tools ($10 to $20 per user) to enable collaboration among members of a workgroup via an intranet. Basic features for online document sharing and collaboration. Requires Web server (Netscape, Microsoft or Apache) in place.

RADNET, INC.'S WEBSHARE SERVER
Cambridge, Mass. (888) 723-6381
www.radnet.com
$2,695 set of Web tools for designing intranet applications. Works with any Web server. Ships with Sybase, Inc.'s SQL Anywhere database.

REVIEW

Load and Go Appliances

By Chris DeVoney

Computerworld reviewed three servers that typify Web appliances: Compact Devices, Inc.'s Twister Internet Server ($1,295), Webtronics, Inc.'s WebBox ($1,295) and Bay Networks, Inc.'s Instant Internet ($2,495). Instant Internet is an Internet gateway for Novell, Inc. networks. Twister and WebBox are Web servers.

The servers are attractive to corporations because they are quick to install and require only modest technical expertise to configure. But they aren't perfect. Neither Web server offers complete Web authoring and management tools, and the Instant Internet router makes no sense if the clients already run TCP/IP. And because the devices are used outside of a central authority, the quality of the content could be a problem.

COMPACT DEVICES' TWISTER

Of the three devices, 4.5-pound Twister was the easiest to install, configure and run, but like the other Web appliances, missing database tools and connectivity constraints limit its use.

The device's internal 1G-byte hard disk is large enough for even a huge Web site. A SCSI-II connector allows for additional disk drives or a backup device.

Bundled software includes Claris Corp.'s Home Page 2.0 and Net-It Software's Now. Documents can be converted in batch mode, though hyperlinks must be added manually.

Like most Web appliances, maintenance is browser-based, and software can be updated in the files. The only knowledge required for setup is where to plug in the cables and what the TCP/IP address is.

Of course, you still have overhead and maintenance of the Web pages. Sophisticated Web layout is beyond Home Page's expertise, and connecting to a database requires CGI programming. Also, Twister's throughput limit of 3M byte/sec. and 30 concurrent connections chokes on busy sites with more than a few thousand hits a day.



COMPACT DEVICES' TWISTER INTERNET SERVER
This 4.5-pound device was the easiest of the three to install, configure and run but lacks database tools

WEBTRONICS' WEBBOX

WebTronics' WebBox tops its competition by offering the TCL scripting language to create CGI applications. Its major problem is limited storage.

The box plugs into any 10Base-T Ethernet network and configures via a Web browser or the serial port. During setup, the box didn't respond to our computer's browser because its address wasn't set correctly, so we ran a character-oriented setup using the serial ports of the box and our computer. The initial setup was basically the same as Twister's.

WebBox uses 1M to 8M bytes of flash memory to hold files and Web pages. It seems to work at about half the speed of other Web servers. The limited memory size can hold most text-based sites and some graphics, but if your needs are larger, look elsewhere.

BAY NETWORKS' INSTANT INTERNET

Bay Networks' Instant Internet is actually a combination Internet router/server. It connects up to 100 concurrent clients on any IPX/SPX network to a local Internet service provider (ISP) using your choice of a 33.6K or 56K bit/sec. modem, Integrated Services Digital Network adapter or T1 adapter.

Because Instant Internet acts as an IPX-to-TCP/IP gateway, all clients use the box's single address to access the Internet, reducing the cost of the Internet account. Because the Novell clients do not need to run TCP/IP, the clients are more secure from TCP/IP-based Internet attacks. A built-in firewall provides additional security.

Configuration is simple. Preconfigured scripts make the gateway connection to more than 600 ISPs, and Bay Networks will write a custom script. Operations use the Novell Directory Service-style interface to load users and groups and assign privileges and restrictions.

Instant Internet excels at connecting any remote office or department. But if the clients run TCP/IP or have Internet access via the corporate network, look at a standard, cheaper Internet router or run clients through the corporate routers.

HOW THEY RATE

Compact Devices' Twister Internet Server
Grade: B, $1,295
www.devices.com
(800) 894-0519

Webtronics' WebBox
Grade: C+, $1,295
www.wtnx.com
(714) 582-1946

Bay Networks' Baystack Instant Internet
Grade: A-, $2,495
www.instant.net
(800) 784-4638

DeVoney is a reviewer in Seattle. E-mail him at chrisd@cybercritic.com.

COMPUTERWORLD INTRANETS *is published monthly on the fourth Monday of the month as a supplement to Computerworld. Editor: Anne McCrory; Designer: Mary Beth Welch; Assistant Managing Editor: Kimberlee A. Smith; Computerworld Magazines Editor: Alan Alper. Phone: (800) 343-6474; E-mail: anne_mccrory@cw.com; fax: (508) 875-8931.*

OPEN systems. Open stondords. Open doors of interchonge onywhere in the world.
Thot is the promise of networking.
And thot is the promise Novell® is delivering.
Novell's innovotive enobling technologies helped creote the networking revolution of yesterdoy
ond ore now helping cotolyze the business revolution of tomorrow.
With millions of users oround the world, Novell server operoting systems truly power the network.
The lotest version of IntronetWore™ softwore, for exomple, offers superior monogement ond control of increosingly complex networks,
including the Internet ond corporote intronets, delivering exceptionol volue ot o low cost of ownership.
IntronetWore is supported by Novell Directory Services,™
the industry's leoding cross-plotform directory service,
providing single-source odministrotion of oll ports of the computing environment,
including UNIX* ond NT servers, minis ond moinfromes.
NDS™ olso closely integrotes with Novell BorderMonoger™ technology, Novell's newest Internet product.

Novell

BorderMonoger is the industry's first integroted fomily of directory-bosed network services
thot monoges, secures ond occelerotes user occess to informotion ot every network border—
the point where ony two networks meet.
NDS ond BorderMonoger ore object-oriented network services thot con be integroted under Novell's Network Object Services for Jovo.®
This unique set of Jovo initiotives ollows developers to fully build robust ond
scoloble server-bosed solutions for the Internet
using open public API specificotions for Jovo opplicotions for globol computing.
And GroupWise® 5.2 leveroges the ubiquity of the Internet to deliver exponded e-moil copobilities
such os colendoring ond scheduling, document monogement, workflow, imoging, threoded discussions ond stotus trocking—
for ony user with ony browser on ony server.
Networks will continue to get bigger, foster ond more complex. But they're still just networks.

And no one knows networks like Novell.

We hove the tools, the technology ond the tolent to moke the networking future o procticol reolity todoy.
Internet, intronet, extronet—onynet—the nome of the network is **Novell.**

www.novell.com

©1997 Novell, Inc. All rights reserved. Novell and GroupWise ore registered trademarks, ond Novell BorderManager, IntronetWore ond Novell Directory Services (NDS) ore trodemarks of Novell, Inc in the United States ond other countries. Jovo is o registered trodemark of Sun Microsystems, Inc. in the United States ond other countries. *UNIX is o registered trodemark of X/Open Company, Ltd

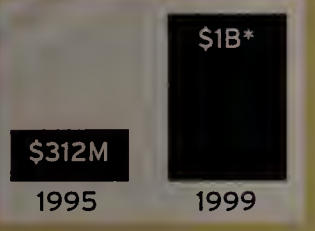
The Enterprise Network

LANs • WANs • Network Management

Briefs

GETTING SECURE

The network security services market will face demand from Internet usage, electronic commerce, the spread of hacker tools and increased awareness



*Projected
Source: Dataquest, San Jose, Calif.

Growing new Vines

Banyan Systems, Inc., based in Westboro, Mass., has announced Vines 8.0, an upgrade of its TCP/IP-based network operating system that lets users centrally create and manage network resources with a graphical tool. Vines 8.0 also supports the Lightweight Directory Access Protocol (LDAP) standard. It will be available this month for $1,995 per server and $70 per user.

New security service

The National Computer Security Association, Inc. in Carlisle, Pa., last week launched a service that provides businesses with a snapshot of potential vulnerabilities to their sites from the Internet. The NCSA Perimeter Check remotely examines Internet-based devices, such as routers, firewalls and servers, for potential security holes on a quarterly, monthly or bimonthly basis. It costs $3,995 for the first 15 devices and $1,500 to check an additional 15 Internet devices.

Network directory

Control Data Systems, Inc. in Arden Hills, Minn., has announced Rialto Global Directory 98, a stand-alone version of the company's directory that includes new security features and application development tools. The software supports X.500 and LDAP. It is available now on Unix. Pricing starts at $2,900 per server.

Calling all customers

▸ Autodialer doubles airline's customer service productivity

By Matt Hamblen



U.S. Airways uses dialing software to call passengers when flights are delayed, reducing unnecessary trips to the airport

MORE AND MORE, airlines concerned with customer service are calling passengers to tell them when a flight is delayed due to bad weather. And those calls are traditionally made by customer service personnel.

Officials at U.S. Airways said they have cut in half the time it takes to contact passengers by using automatic dialing software they installed more than a year ago. The faster they notify a passenger, the less likely it is a customer makes an unnecessary trip to the airport.

"We've improved the productivity [of calling agents] by at least 2-to-1 and maybe by more," said John Magliocca, director of special services at U.S. Airways in Arlington, Va. "It eliminates a lot of work."

"We had a manual outbound calling process in place before, but this method gets in touch with more people in a shorter time, and that's good customer service," Magliocca added.

TOO MANY CALLS

The airline employs 75 agents in Winston-Salem, N.C., who actually talk to passengers whose flights were delayed or routed to another airport. The agents, who also book new passengers, make more than 5,000 calls per day.

Automatic dialer software from Mosaix, Inc. in Redmond, Wash., picks passenger telephone numbers from the airline's database and initiates calls.

No agent is involved until a passenger picks up the call. That saves the agent the time in dialing or reaching busy signals or fax machines. The agent is notified automatically via a desktop PC when a passenger answers, and then the agent works with a customer's record to help reschedule a flight.

With the automatic calling

Airline, page 43

WORKFLOW

Novell ships GroupWise add-on

▸ Can use E-mail to build workflow apps

By Barb Cole-Gomolski

NEW SOFTWARE from Novell, Inc. is putting workflow applications within closer reach of users of its GroupWise messaging system.

The Provo, Utah, company recently shipped GroupWise WorkFlow Professional, add-on software for GroupWise that lets users build and participate in workflow applications using their electronic-mail clients.

The software was designed to automate document-driven processes such as expense reporting and capital requests. It could also be used for project management and to poll work-

Workflow, page 45

IS managers shop the Internet for just the right tools

By Patrick Dryden

'TIS THE SEASON for IS managers to stuff their stockings with some handy tools for maintaining client/server networks.

The Internet is a toy factory for freeware and cheap point products to finish off those calendar-year budgets and discretionary funds.

"Right now, I'm seeking something simple to monitor Windows NT servers and send an alert about any problems," said Gil Brand, an information systems vice president at the Dallas data center of NationsBank Corp. in Charlotte, N.C.

Brand said he has an immediate need to fill, even though the bank is beginning the arduous implementation of "the Cadillac of systems tools" — integrated enterprise management software from Tivoli Systems, Inc. — that eventually will handle this task.

Such strategic choices can eventually pay off, but IS managers must keep an eye on value, said Theo Forbath a consultant at Northeast Consulting Resources, Inc. in Boston. Pick the tool to fit the problem, and it will quickly pay for itself, he said.

For example, managers at Gale Research turned up a "nice, inexpensive adjunct to established tools" for monitoring Unix, Novell, Inc.'s NetWare and Windows NT servers, said Jim Kenyon, director of technology infrastructure at the directory publisher in Detroit.

Tools, page 47

STOCKING STUFFERS

A few places to peek for free network and systems management tools:



Windows 95
Handy little utilities from Microsoft's kernel and GUI developers
www.microsoft.com/windows/windows95/info/kerneltoys.htm
www.microsoft.com/windows/windows95/info/powertoys.htm

SNMP
IntraSpection console from Asante Technologies reports on standard statistics reported via Simple Network Management Protocol
www.intraspection.com

Unix
Top five tools to handle frequent chores faced by managers of Sun Microsystems servers and networks
www.dataman.nl/cgi-bin/sunmanagersview?3+15401+top%20five%20tools

Forget About *El Niño.*





The **6** *PROCESSOR*
ALR Revolution 6X6
really blows away the competition

a new world record in *Intel®-based Windows® NT performance*

13,089.30 *tpmC™*

Microsoft® SQL Server™ 6.5 Enterprise Edition

$35.11 *per tpmC*

record setting enterprise price/performance

Windows NT/SQL Server Price Performance



Results as of November 6, 1997. Complete TPC-C performance information can be found at www.tpc.org

You want to see real power? Forget about unpredictable winter weather patterns and focus your satellites on the ALR Revolution 6X6. As the first MP Spec compatible system to boast the power of six Pentium® Pro processors, this server powerhouse is taking the Enterprise Computing world by storm.

In fact, storm might be too mild a word. An ALR Revolution 6X6 running Microsoft SQL Server 6.5 Enterprise Edition recently clocked in at 13,089.30tpmC — the highest TPC-C score ever recorded by an Intel®-based server. More remarkably, this same system set a new price/performance standard with a phenomenally low cost of only $35.11 per tpmC. So now, the most powerful server is also your best server buy.

Factor in the Revolution 6X6's many high availability features and built-in server management, and you've got a long range forecast for years of trouble-free computing.

Predicting the weather is hard. But finding the most powerful Intel-based Enterprise Server is easy. Just visit your local ALR reseller. For the one nearest you, call our toll-free number today.

800-444-4ALR

ALR
Advanced Logic Research, Inc.
www.alr.com

intel inside
PENTIUM®PRO
PROCESSOR

Advanced Logic Research, Inc. 9401 Jeronimo, Irvine, CA 92718 (714) 581-6770 FAX (714) 581-9240 Prices, configurations and specifications subject to change without notice. Systems specifications subject to change without notice. Systems shown with optional equipment. Listed prices reflect case configurations on specific configurations, please consult your ALR reseller. Pricing based on U.S. dollars. ALR is a registered trademark of Advanced Logic Research, Inc. Intel, Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. TPC, TPC Benchmark and the Transaction Processing Performance Council. All other brand and product names are trademarks or registered trademarks of their respective owners. 1997 by Advanced Logic Research, Inc.

Airline notifies of delays

CONTINUED FROM PAGE 41

software, which is sometimes called a predictive dialer, U.S. Airways said it saves at least 40 seconds per call. That means it could save 55 hours of work by its entire staff on a busy day. When agents aren't making calls to reschedule flights, they are verifying information on customer accounts and scheduling new passengers.

"This application sounds very useful" for customers, and the positive experience might give a customer impetus to call the airline in the future for a flight, said analyst Chris Selland at The Yankee Group in Boston.

"It's a positive trend if this takes hold. A lot of different customer-friendly applications are possible, and customer service is such a key element," said Al Fross, president of The Pelorus Group, a consultancy in Raritan, N.J.

About 23 vendors compete in the call center dialing systems market, with Mosaix expected to finish second in U.S. sales this year behind EIS International, Inc. in Rockville, Md. EIS should take about 18% of the market this year, with Mosaix close behind at 16%, according to Pelorus' predictions.

The domestic market was $276 million in 1996 and is expected to top $380 million in 2000, Pelorus said.

U.S. Airways wouldn't discuss what it paid Mosaix, but analysts said automatic dialer systems for large companies average in price from $4,000 to $7,000 per seat for software and hardware.

Magliocca said the Mosaix system has more than paid for itself in a year of use. □

NEW PRODUCTS

CONCORD COMMUNICATIONS, INC. has announced Network Health 4.0, software for network analysis and reporting on Unix and Windows NT networks.

The Marlboro, Mass., company said the software has new point-and-click report capabilities to select what elements to monitor, the frequency of the report and the output format.

Pricing begins at $20,000, and the Network Health Developer Program starts at $5,000.

Concord Communications
(800) 851-8725
www.concord.com

KONEXX UNLIMITED SYSTEMS CORP. has announced AutoSet, a switchless, portable modem interface product.

The San Diego company said AutoSet turns digital PBX lines found in many hotels and offices into analog lines. It weighs 9 ounces, has a 9V battery and uses digital signal processing to automatically set signal levels for the telephone connected to a computer modem. AutoSet costs $199.

Konexx Unlimited Systems
(619) 622-1400
www.konexx.com

NETWORK INTEGRITY, INC. has announced LANtegrity 4.0 for NetWare, software for backing up servers that run Novell, Inc.'s NetWare on LANs and WANs .

According to officials at the Marlboro, Mass., company, this version offers real-time, byte-level backup by capturing only the bytes that are modified on protected servers. The software includes support for NetWare Loadable Module databases and applications that store data on a server.

It costs $6,995 for the server software and a 100-user license.

Network Integrity
(508) 460-6670
www.netint.com

ADVERTISEMENT

Managing Re-Systemization

How U S WEST Dex moved from a mainframe to a distributed environment with PATROL

U S WEST Dex, one of many U S WEST companies, sells Yellow Pages advertising, related mailing lists and other products that are derived from telephone directories. In all, they publish over 300 directories with over 42 million printed copies.

Handling all of this publishing and taking care of nearly half a million USA and international clients calls for complete distribution of data 24 hours a day. All of the company's critical applications must be available to thousands of users.

The original mainframe needed upgrading and the decision was made by U S WEST Dex management to move to a distributed environment. Over a period of many months, operational processes were decreased on the mainframe and increased on the distributed systems.

U S WEST Dex created a new group called the "System Management Center" (SMC) to recommend products to help them ease and manage the transition. As interaction with the SMC progressed over a couple of months, one partner relationship between two vendors stood out, that of Hewlett-Packard and BMC Software.

"We found that the partner relationship between these two companies was able to satisfy a broad range of our needs. The joint presentation of their individual products tended to complement and even strengthen each other. We saw clear advantages to both vendors working with us as a single team rather than separately. We awarded them our contract jointly and plan to order more later this year," explains Project Manager Henry Vargas of U S WEST Dex.

"Our business-critical applications have been re-architected into the client/server model to help give us a competitive advantage. We use the Hewlett-Packard systems due to their mission-critical capabilities, high performance and the ability of Hewlett-Packard and BMC Software to put together a solution."

These products will provide U S WEST Dex with the ability to collect information from their new distributed computing environment and process it to report the status of individual elements within their IT environment. They will be able to graphically show the current status of all elements of their enterprise, including networks, systems, applications and databases, and manage them through one console. They should realize a seamless, easy transition of critical systems with reduced user downtime.

"We are pleased to be working with BMC Software on this project," said Business Development Manager Travis Muesing, of Hewlett-Packard. "We have worked with them before and have always felt that our products, services, support and education complement each other. Together, we can always provide our customers with a complete, timely and cost-effective solution to their integrated network and system management needs."

U S WEST Dex plans to incorporate more of the Hewlett-Packard and BMC Software products to provide additional support for IT operations, performance monitoring and IT administration.

"HP *is reselling PATROL® technology and products because of the tight integration BMC Software is delivering through the HP OpenView enterprise solutions. Together, HP OpenView and PATROL provide the highly desired complementary functionality that our customers need today in the areas of application and data management.*"



PATROL

Johnnie-Mike Irving, General Manager
HP Professional Services Organization
for the Americas

Top industry leaders are relying on PATROL for a reason.
To find out why visit us on the Web at: www.bmc.com/patrol
Or call today: 800 811-6766

BMC SOFTWARE
www.bmc.com/patrol

BMC Software, the BMC Software logos and all other product or service names are registered trademarks or trademarks of BMC Software, Inc. in the USA and other selected countries. ® and ™ indicate USA registration or USA trademark. Other logos and product/trade names mentioned are registered trademarks or trademarks of their respective companies. ©1997, BMC Software, Inc. All rights reserved

Nortel solidifies #1 ATM enterprise switch position with 38.6% market share.
– Vertical Systems Group, 1997

Nortel grows to #1 in frame relay enterprise switch market capturing 19.8% of the market.
– Vertical Systems Group, 1997

Nortel captures #1 position in the FRAD (frame relay access device) market.
– Dataquest, 1997

Nortel rises to #3 in the worldwide frame relay equipment market.
– Vertical Systems Group, 1997

Nortel maintains #1 leadership position in the packet switch market.
– Dataquest, 1997

For anyone who still thinks of us as only a voice company– now can we talk?

NORTEL MAGELLAN It may come as a surprise to some, but at Nortel our consistent success in providing wide area network solutions to data network customers worldwide is just another day at the office. You see, for nearly 25 years we've been building data networks – including enterprise network switches, frame relay, frame relay access devices and packet switches – for many of the world's most mission-critical applications. In fact, there are over 6,500 Nortel Magellan Passport ATM enterprise network switch installations around the world. Now, combine our global success in data network solutions with our continued leadership in voice networking and you have a Nortel Power Network™ – the next generation of integrated multimedia networks. If you'd like to find out more, give us a call. We're ready to talk.

1-800-4NORTEL, department 3Y8Y or www.nortel.com/3Y8Y

NORTEL
NORTHERN TELECOM

MAGELLAN
PART OF
NORTEL
POWER
NETWORKS



Do you have a Power Network?

©1997 Northern Telecom. Magellan, Passport, Power Networks, Nortel and the Nortel globemark are trademarks of Northern Telecom.

Workflow add-on for GroupWise

CONTINUED FROM PAGE 41

groups to determine a consensus.

The E-mail-based workflow package could prove easier and less costly to deploy than a stand-alone workflow system, users said.

TOO TRIVIAL

Ron Nicholson, a senior systems administrator at Georgetown University in Washington, said he has wanted to automate purchase requisitions for some time.

However, he couldn't justify a stand-alone workflow package for such a trivial application, he said.

THIRD PARTIES FILL GAP

Workflow options for the leading messaging systems

Product	Workflow add-ons
Novell GroupWise	WorkFlow Professional
Lotus Notes	Add-ons from Action Technologies and Casahl Technology; IBM's Flomark software
Microsoft Exchange	KeyFile's KeyFlow and Eastman Software's Workfolder for Exchange

It also would have meant going to a third-party vendor and possibly requesting new hardware, Nicholson said. GroupWise WorkFlow Professional will allow him to use his existing E-mail network and deal with a familiar supplier.

Although adding workflow to an existing messaging network is fairly simple, that also could limit its scalability, according to Frank Manci, a network technical manager at Colonial Savings F.A. in Fort Worth, Texas.

For example, GroupWise WorkFlow Professional couldn't replace Colonial's mortgage loan application, which was built using a stand-alone workflow engine from Mosaix, Inc. in Redmond, Wash., Manci said.

EASY TO USE

Ease of use is also a big issue for users, because workers are supposed to be able to use GroupWise Workflow Professional to design their own workflow applications. Novell officials said users simply need to place icons on a workflow canvas and draw arrows to assign steps in the workflow to their co-workers.

"It's nice because the [workflow] documents go right into your GroupWise inbox," said Dan Wood, network technical administrator at American Society for Quality, a nonprofit professional group in Milwaukee that beta-tested the software.

Wood said it could be used to "automate the processing of a lot of paper forms that flow around the office."

It also gives co-workers a way to check the status of a document without finding out whose desk it is on, he said.

Third-party workflow add-ons are already available for Notes and Microsoft Corp.'s Exchange, but Novell has taken a different approach by licensing workflow software from FileNet Corp. in Costa Mesa, Calif.

GroupWise WorkFlow Professional runs on Windows 95 and Windows NT. Pricing is $149 per user when purchased alone, or $69 when purchased in conjunction with a GroupWise 5.2 license. □

ADVERTISEMENT

From Desktop to Enterprise

Leaders in I/O Technology

The demand for device driver portability between operating systems and host platforms, combined with increasing requirements for intelligent, distributed I/O processing has led to the development of the Intelligent Input/Output, or I_20 specification. BMC Software and Intel Corp. are working closely with the I_20 Special Interest Group (SIG) to bring I_20-compliant technologies to market, including integrating PATROL Management solutions with the Intel i960RP I/O processor.

"The importance that the Intel/BMC relationship brings to the market is that BMC innovation in I/O technology naturally makes them a leader in this collective new I/O-centric industry," states Alan Steinberg, Director of New Business Development, Connected P.C. Division at Intel. "Currently we have companies coming in from the desktop and from other areas of the industry that don't necessarily have the Enterprise experience BMC Software has to deal with the type of I/O that is needed in what could be called the new 'open mainframe' world."

Steinberg envisions a world where Microsoft will provide the main operating system, Intel will provide the hardware architecture and BMC Software will contribute the key I_20-compliant management technology. BMC Software's role will be to help architect what Steinberg calls the "highly available, highly manageable open system mainframe" on the I/O space.

Bob Beauchamp, Vice President of Strategic Marketing and Corporate Development for BMC Software, agrees. "The pervasiveness of the i960 chip in the Windows NT and NetWare environments, combined with BMC Software's PATROL technology, will empower customers with unprecedented management and monitoring capabilities from the application to the motherboard."

Clearly, the ability to gather statistics regarding I/O is a great step forward. The PATROL Application Management Suite completes the picture by correlating I/O statistics with the applications that are utilizing the I_2O components or sub-system. This allows unprecedented optimization capabilities, such as automated load balancing, cache reallocation, and the rerouting of network traffic. All of these capabilities can be performed on demand and are based on the performance requirements of the applications. Currently, no two vendors come as close as Intel and BMC Software in providing this comprehensive approach to I/O processing and manageability.

"We've moved into a new paradigm where I/O is as important as the central CPU technology," states Steinberg. "This shift will allow BMC to proliferate its management product line in the open systems environment. Pairing Intel I/O technology with PATROL is just the very beginning. It's the first product of many, as this new I/O-centered technology emerges into the marketplace, and we think it's going to be an exciting ride."

Intel

Corp. is integrating PATROL® management technology into the i960RP® I/O processor in order to provide the direct management capabilities for I/O subsystems customers are asking for.



PATROL

Top industry leaders are relying on PATROL for a reason.
To find out why visit us on the Web at: www.bmc.com/patrol
Or call today: 800 811-6766

BMC® SOFTWARE
www.bmc.com/patrol

BMC Software, the BMC Software logos and all other product or service names are registered trademarks or trademarks of BMC Software Inc. in the USA and in other select countries. ® and ™ indicate USA registration or USA trademark. Intel and i960RP are registered trademarks of Intel Corp. Other logos and product/trade names mentioned are registered trademarks or trademarks of their respective companies. ©1997, BMC Software, Inc. All rights reserved.

The SAS® Data Mining Solution

Discover the Diamonds in Your Data Warehouse



Introducing the first-ever, fully integrated data mining solution…one that maximizes your return on investment in data warehousing and data marts—as decision makers exploit your customer data for competitive advantage.

SAS Institute, for 20 years the leader in data discovery, provides the most complete and reliable data mining solution for modeling, measuring, and enhancing the profitability of your business. This Web-enabled, point-and-click approach lets you employ OLAP, neural networks, churn analysis, and many other visualization and analytical techniques to **improve customer retention, target key prospects, profile market segments, detect fraud, analyze customer response**, and much more.

Begin Your Discovery with our Free Web-Integrated CD ROM

Digging for Diamonds: The SAS® Solution for Data Mining lets you explore data mining from both a business and an IT perspective. And it's linked directly with our World Wide Web site, so you can continue to make new discoveries and gain fresh insights.

To request your copy, visit SAS Institute at **www.sas.com/datamining/** or give us a call.



SAS Institute Inc.

The Business of Better Decision Making

E-mail: cw@sas.com www.sas.com/datamining/ 919.677.8200 In Canada 1.800.363.8397

SAS is a registered trademark of SAS Institute Inc. Copyright © 1997 by SAS Institute Inc.

Finding just the right tools

CONTINUED FROM PAGE 41

Service-level reporting software called AlertPage Enterprise from Geneva Software in Northbrook, Ill., tracks the performance of network access, file service and electronic mail for 700 users without forcing IS to justify the expense of a big management platform, Kenyon said.

Pricing starts at $695 for up to 500 users, just a "blip on the budget," he said. "We just downloaded the software, turned it on and off it went."

Another handy product that sneaks in under the radar is WhatsUp Gold, which also costs $695.

For that price, the product, from Ipswitch, Inc. in Lexington, Mass., will monitor an unlimited number of servers and network devices.

INSTANT EXPERTS

An IS staffer cruising the World Wide Web at New York-based Elizabeth Arden Co. found WhatsUp Gold. Within two days, the IS group became experts at customizing its tools, said Steve Steffek, senior technical specialist for global networking. "Now we can see network problems before our outsourcer does," he said.

The Web itself is "the best tool of all time" for freeware and application notes and support tips, said Trevor Paquette, senior Unix network architect at Metronet Communications Corp. in Calgary, Alberta.

But beware of newsgroups and subscribe to mailing lists instead, Paquette warned. "Newsgroups are cluttered with cross-postings you must wade through, and few good sources like to post there anymore for fear that E-mail spammers will pick up their address."

Some IS managers also warn against the free and easy spread of management tools throughout an organization.

NO BIG PICTURE

Homegrown software and diverse products don't work together, so central IS can't get a cohesive view of operations, said Bill Oris, an IS vice president at J. P. Morgan & Co. in New York.

"We're trying to get rid of most of the 150 tools we have now" by implementing the Unicenter TNG enterprise management suite from Computer Associates International, Inc., Oris said.

Also, wanton use of management tools can clog networks with monitoring traffic and sap servers, routers and other crucial gear, said Joe Askins, director of data communications at Arizona State University in Tempe. □

SHORTS

Online security

Cisco Systems, Inc. in Menlo Park, Calif., and Hewlett-Packard Co. in Palo Alto, Calif., have jointly released the Secure Web Transaction Solution. The package helps customers conduct business processes such as electronic commerce and financial services over the Internet. It prevents hackers from gaining access to restricted data. The

Secure Web Transaction Solution is shipping now. Pricing begins at $164,646.

Crash handler

Alexander LAN, Inc. in Derry, N.H., has announced a special holiday promotion for its Alexander Server Protection Kit (SPK), an automated crash server handler for Novell, Inc. NetWare 3.11 and 4.11 networks. The SPK takes over in the event of a server crash, runs diagnostics and restarts the server. Users who purchase or upgrade to the Alexander SPK by Jan. 1 will receive a 12-month Upgrade Protection Plan for each license for free. The Alexander SPK retails for $498.

Advertisement

Smooth Transitions

Louis Poulsen & Co. smoothes their transition to SAP R/3 and open systems with PATROL

Denmark's Louis Poulsen & Co. A/S is known internationally as the manufacturer of the world-famous PH lamps, and as sellers of electrical appliances. Louis Poulsen has its production wing based in Denmark, but sales and distribution offices are spread around the world on four continents. Consequently, it is a company with simultaneous requirements for advanced production management, effective logistics, and continuous budget control across a geographically distributed environment.

To more effectively meet these requirements, Louis Poulsen decided to move their IT operations from an IBM mainframe system to an SAP R/3 solution running on IBM RS/6000 hardware with the Informix RDBMS.

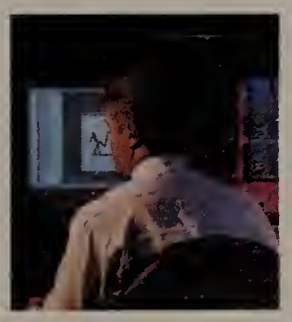
The benefit is obvious when the entire system is running smoothly – no matter where in the world requests come from, everyone receives up-to-date and exact information. However, when things are not running smoothly, the problems are also obvious.

Louis Poulsen realized they could more effectively utilize client/server solutions if they made automated management part of their overall management strategy. Their first step was to introduce the IBM NetView product for management of their network environment. The next step was to incorporate automated application and database management through the PATROL® Management Suite of products from BMC Software.

Peter Jacobsen, manager of IT operations states that, "without a doubt, automated monitoring of the Informix database, especially the PATROL features that help ensure log files do not overflow, has helped avoid a number of situations that would otherwise have resulted in an outage."

When BMC Software announced in 1996 a PATROL Knowledge Module that would proactively manage SAP R/3, it was an easy decision for Louis Poulsen to trial the product. "SAP R/3 comes with a systems management tool called CCMS," says Jacobsen, "but to use it you need manual interaction. PATROL gave us the ability to automatically monitor relevant R/3 parameters and, at the same time, have information about them presented to us in context with other information from PATROL about our databases and platforms. With PATROL, we get a complete overview about how our application environment is operating."

Through PATROL, Louis Poulsen learned of a number of important parameters in their application environment that could be monitored and tuned to support higher application availability and improve performance – parameters they didn't even know the existence of before PATROL. Now, at any time, they have instant access to this important information. Says Jacobsen, "With PATROL, we have a tool that allows us to drill deep into our systems, applications and databases for information. Plus, PATROL lets us know if changes we are making in one area of our environment will have a negative impact on other areas. There are still many things we have to learn about PATROL, but we definitely know it is necessary for future management and tuning of the system as well as our insurance for keeping up with the end users' demands for availability."



"SAP believes that PATROL® currently offers one of the leading solutions for in-depth monitoring and management of R/3. It is important that our customers have management tools like PATROL that can ensure optimal performance and high availability."

Dr. Arnold Niedermaier,
Technology Marketing
SAP AG

PATROL

Top industry leaders are relying on PATROL for a reason.
To find out why visit us on the Web at: www.bmc.com/patrol
Or call today: 800 811-6766

BMC® SOFTWARE
www.bmc.com/patrol

BMC Software, the BMC Software logos and all other product or service names are registered trademarks or trademarks of BMC Software Inc. in the USA and in other select countries. ® and ™ indicate USA registration or USA trademark. Other logos and product/trade names mentioned are registered trademarks or trademarks of their respective companies. ©1997, BMC Software, Inc. All rights reserved.

THE SURGEON
WARNED THAT S
CAN STUNT YO

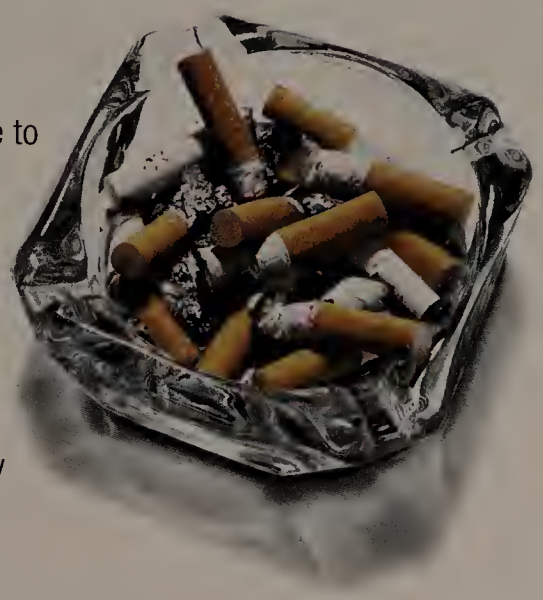
PC servers* appear to be perfectly harmless. But if you tie them to the growth of your company, you may find yourself with little room to breathe. Especially when you're looking for more transaction throughput, better Web performance, and a scalable home for your key business applications. The Sun™ Enterprise 450 Workgroup Server, starting below $15,000, delivers print and file services for your workstations, thin clients and PCs. What's more, true enterprise-class solutions from Lotus® and Oracle®

ANY DA
HE'LL INCLUDE

*PC servers refers to servers running Microsoft® Windows® NT.® ©1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun Logo and The Network is Th

GENERAL HAS EVERAL THINGS OUR GROWTH.

will run like they're tuned for Sun–because they are. And since the Sun Enterprise



450 is part of a family that scales up to 64 processors, you'll never have to sacrifice business-critical scalability. Plus, Sun supports the Enterprise 450 with worldwide customer service. So call 1-800-SUN-FIND today for a Sun representative or reseller near you. Or visit us at www.sun.com/wgscw

Sun microsystems

Before you get hooked on the wrong thing. THE NETWORK IS THE COMPUTER.™

Y NOW, PC SERVERS.

puter are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. Other trademarks are the property of their respective owners.

The World's Most Effective Enterprise Management Software



Over 1,000 major industrial sector companies have chosen BPCS Client/Server v.6 over the competition.

Why?

Three simple reasons:

1) The fastest time-to-benefit in the industry
2) Killer enterprise technology
3) Unmatched global support

Call 1-800-SSA BPCS or visit us at www.ssax.com

SSA

The Best Way Forward

Software

Databases • Development • Operating Systems

Briefs

Java-based DSS

Influence Software, Inc. in Sunnyvale, Calif., last week announced Java-based software that handles data analysis, reporting, event notification and other functions. The Aperio suite runs on Unix and Windows NT servers and can be accessed from World Wide Web browsers without any client-level code, Influence officials said.

OmniGuard for Oracle

Axent Technologies, Inc. in Rockville, Md., last week expanded its security management software to cover Oracle Corp. databases. The OmniGuard/Enterprise Security Manager for Oracle release lets security administrators monitor database access privileges, passwords and usage logs. It supports Oracle7 databases. Prices start at $1,995 per processor, plus $2,990 for a base security manager and a Unix server agent.

NCR OLTP middleware

NCR Corp. in Dayton, Ohio, upgraded its middleware with Top End 2.05, adding features targeted at data warehousing and electronic commerce. These features include support for Java applets and large data messages up to 2M bytes. The features will let users combine a large volume of small data messages used in online transaction processing (OLTP) environments with occasional large messages. Server versions for Top End 2.05 cost $2,500.

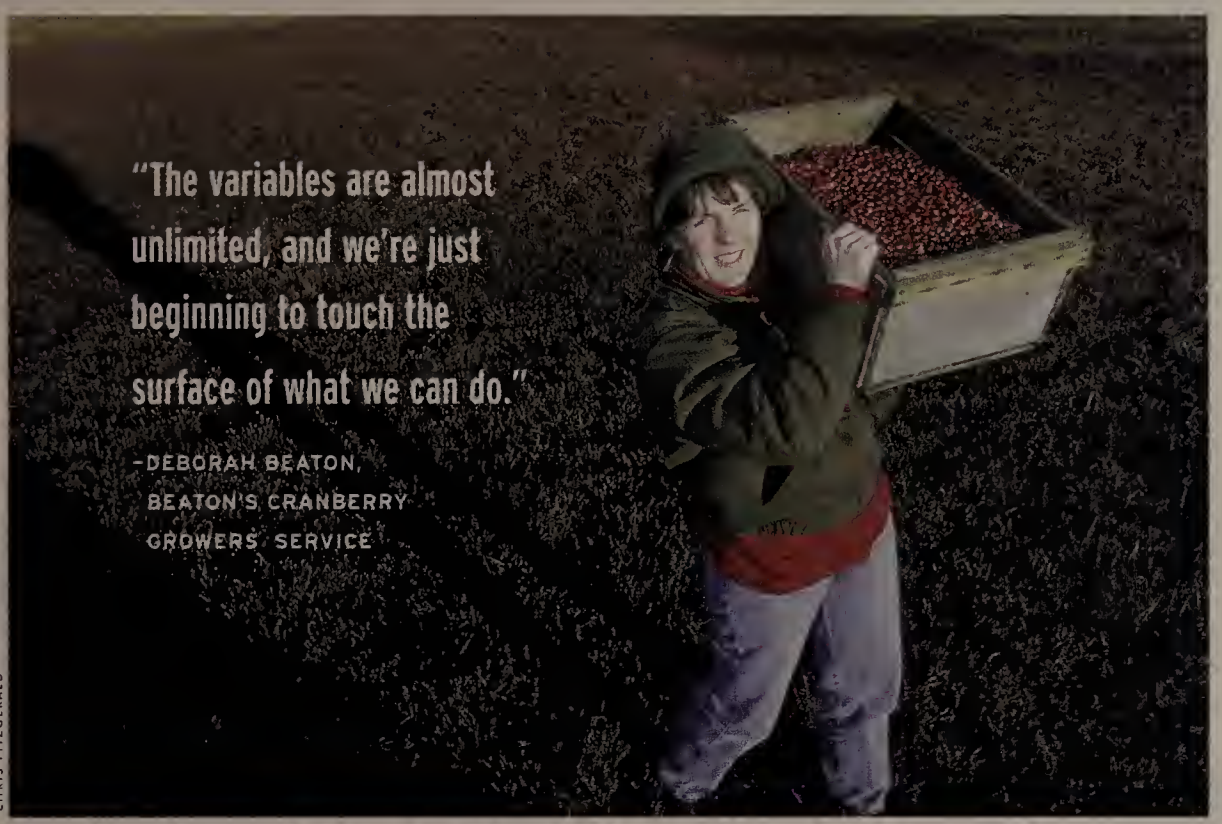
What good will it do?
Business benefits that users expect from data warehouses

Better data for making decisions	42%
Faster decision-making abilities	42%
Competitive advantage	38%
Decreased costs	24%

Base: 50 Fortune 1,000 companies; multiple responses allowed

Source: Forrester Research, Inc., Cambridge, Mass.

Cranberry farmers boot up



A PC and MapInfo software help Beaton's cranberry farm track crop fertilization

By Stewart Deck

DEBORAH BEATON CAN tell you plenty of colorful cranberry stories.

Beaton, the wife of a fourth-generation cranberry farmer in Lakeville, Mass., can tell you the optimal time to bring in pollinating beehives for particular berry varieties; how sweet cranberry-flower honey tastes; and how many times per year bogs are fertilized.

Beaton's husband Peter, one of the owners of the 1,200-acre Beaton's Cranberry Growers Service, can tell you even more about rain, soil and temperature. The 50-year-old farmer last year decided to start letting a PC tell him more about his crops than he could divine from his more than 30 years of expe-

Cranberry farmers, page 52

CA's object database gets its sea legs

▸ *Technology still unproved in market*

By Craig Stedman

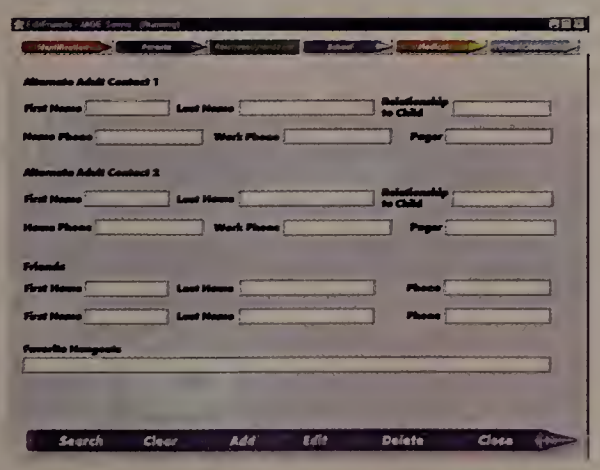
AFTER A LONG STAY in dry dock, Computer Associates International, Inc.'s Jasmine object database finally has been deemed seaworthy.

Now CA has to go out and prove it can bring object database technology more into the mainstream of corporate information systems.

FIRST IN WATER

CA, which released Jasmine this month after a year of delays, is the only big database vendor that is betting on a fully object-oriented product. Object databases sold by a gaggle of smaller companies so far have barely made a dent in the dominance of relational software.

But early Jasmine users said CA's combination of an object database engine and a drag-and-drop development environment may make a pure object approach more palatable, especially for World Wide Web applications that involve multimedia data. For example, The Chase Manhattan Bank Corp. in New York uses Jasmine to develop an online newsletter for workers who sell and manage mutual funds through a separate company that is serviced by the bank's IS department.



Incredible Card uses Jasmine to help speed children through emergency rooms

Storing multimedia data such as images and audio in relational database tables would limit functionality for end users and would require "a lot of extra work up front" by developers, said Kenneth Watson, manager of infrastructure application services at Chase's large-account unit.

And Jasmine's built-in Jade development environment is easy to use, so employees at the mutual fund company should be able to modify the newsletter themselves by dragging objects around their screens, Watson added. "You don't need a programmer sitting there helping them do it," he said.

Incredible Card Corp. in Hicksville, N.Y., uses Jasmine as the central database for an upcoming application that will store medical records, fingerprints and other personal information about children on smart cards that can be scanned in emergency rooms.

Jasmine in tests ran two to

Jasmine, page 52

Office gets HTML; open file format not a given

By Gordon Mah Ung

MICROSOFT CORP.'s announcement that it would embrace HTML as a native file format in the next version of Office doesn't necessarily mean the company is embracing a universal file format, industry observers said.

Microsoft is pushing to Web-enable its products and serve Windows 3.1 users.

Breaking from tradition, Microsoft said this month it would support its proprietary binary format and the universal language of the World Wide Web: Hypertext Markup Language.

The move is significant because it shows Microsoft is

HTML, page 52

Cranberry farmers boot up

CONTINUED FROM PAGE 51

rience. "In many ways, cranberry farming is a seat-of-the-pants kind of thing that changes with each variable," 36-year-old Deborah Beaton said.

Last spring, she worked with a programmer at Charles River Technologies in Wellesley, Mass., to develop an application based on MapInfo Corp.'s $1,200 MapInfo Professional software.

The program lets the Beatons overlay geographic maps with information about weather patterns, crop varieties, yield and the farm's use of insecticide and fertilizer.

ENDLESS POSSIBILITIES

"The variables are almost unlimited, and we're just beginning to touch the surface of what we can do," Deborah Beaton said. The program runs on a regular Pentium-based PC.

Such geographic information systems mapping applications are used in a wide variety of industries to track information, including geographic cellular telephone use and the location and condition of phone cables. The software also is used extensively by other kinds of farmers, said James Lein, associate professor of geography at Ohio University in Athens.

"Most recently, the management of individual farms has received a lot of interest, particularly [for] optimizing the arrangement of crops in the field, cropping patterns and cropping schedules," Lein said. "In this context, the computer map serves as the center of a decision-support system or management tool to guide the farmer."



CHRIS FITZGERALD

Technology helps Deborah Beaton (above) and husband Peter manage fertilization of cranberry bogs

The Beatons first used the software to generate maps that guide school groups and helicopter pilots to individual bogs. Since then, the farm has used the application to simplify its fertilizer operation.

Each bog is fertilized seven times per year by helicopter, and each application needs to be timed precisely for proper growing.

By overlaying geographic maps with growth and variety data, the Beatons can order the exact amount of fertilizer they need at the proper time.

KNOWLEDGE MANAGEMENT

The correct amount of fertilizer is loaded on to helicopters, and pilots are given precise directions — which now include details about where power lines are located — to each of the bogs. Helicopter pilots charge $400 per hour, so a mistake that sends one all the way back to a supplier for more fertilizer can be extremely costly.

And because all the data can be linked together, the Beatons have slashed the time it takes to figure supply quantities from two hours to five minutes.

All this data could overwhelm an operation or get filed away and not used without a good way to store and analyze it, Deborah Beaton said.

"My husband is amazing. He has kept all of this information in his head for 30 years. But now I'd like to free up some of his mind for other things," she said. □

CA's Jasmine gets its sea legs

CONTINUED FROM PAGE 51

three times faster than relational software that had to pull the data out of row-based tables, said Mark Basile, CEO at Incredible Card.

"When you're trying to get information that might help save someone's life, time is everything," Basile said.

Incredible Card looked at other object databases, but their multimedia search capabilities didn't match Jasmine's, Basile said. CA's market heft also makes it "more credible on the support side" than the smaller object database vendors, he added.

Object database sales are expected to total only about $200 million this year, according to International Data Corp. (IDC) in Framingham, Mass. That is a minute fraction of the overall database business, which IDC projects at about $11.5 billion.

Unlike CA, database vendors such as Oracle Corp. and Informix Software, Inc. are adding object features to their relational products. That may be the way to go for users who "don't have the luxury of throwing out everything and starting over," said Carl Olofson, an IDC analyst.

For new applications that involve multimedia or complex data structures, the Jasmine/Jade combination "really takes the fear out of using an object database," Olofson said. But Islandia, N.Y.-based CA still has to prove that Jasmine can scale, he said. □

Users tame ERP systems with third-party schedulers

By Randy Weston

USERS ARE TURNING to third-party job scheduling applications to tame the herd of enterprise resource planning (ERP) beasts they use to run their businesses.

Many of those job schedulers, which allow users to run resource-intensive jobs such as batch financial reports overnight, have adapters designed for specific ERP packages such as SAP AG's R/3.

Those adapters, combined with links to legacy applications, allow users to plan processing across their company from a single source.

SIMPLIFY

"The issue of scheduling lots of jobs, and lots of complicated jobs, has arrived at client/server space," said Sue Aldrich, an analyst at Patricia Seybold Group, Inc. in Boston.

"For a mere mortal who has to run jobs on a bunch of different platform, these schedulers are a godsend. You don't have to know the [Windows] NT command for this or the Unix command for that," Aldrich explained.

Among the companies releasing job scheduling modules specific to application packages are Santa Clara, Calif.-based Unison Software Inc. Its Maestro product is the first system to be certified by SAP for use with R/3.

Also available is AutoSys from Platinum Technologies, Inc. in Oakbrook Terrace, Ill.

While SAP R/3 and other systems come with job schedulers, some users are turning to the third-party products because it allows them to better link disparate systems.

For instance, Secaucus, N.J.-based Matsushita Electric Corp. of America has a plethora of ERP systems to run its five divisions.

They include R/3, Denver-based J.D. Edwards & Co.'s OneWorld and Pro21, which is made by a small Dutch vendor. Matsushita is using Maestro to schedule processing jobs.

SAP's job scheduler "works well within R/3, but when you are dealing with legacy systems and other systems, it doesn't have the tentacles to reach out and grab any of the other systems," said Wayne Hebert, production control scheduler for Matsushita.

"We were looking for something that could handle both sides of the fence," he explained.

Pricing for a system such as Maestro starts at about $14,000 for a single system, plus $4,000 for every additional system to be linked to the job scheduler.

Aldrich said users who are looking for a third-party product should make sure the scheduler can link to all the platforms that may run in a company. □

HTML format

CONTINUED FROM PAGE 51

pushing to Web-enable its products and also serve a large installed base of Windows 3.1 users who aren't migrating to Windows 95 as fast as the company had hoped, analysts said.

"I think it actually shows the evolution in Microsoft's thinking. Previously, they focused on new systems and new software for revenue growth. They're saying we have to take care of the base now," said Chris Le Tocq, a software analyst at Dataquest in San Jose, Calif.

Le Tocq said Microsoft miscalculated the maturing market when it assumed users would upgrade quickly. Various industry polls indicate that at least 50% of corporate desktops still run Windows 3.x products. Le Tocq said Microsoft is adding features that will entice users to upgrade but let those with older hardware and software still view documents created with Microsoft products.

But would Microsoft's competitors — Lotus Development Corp. and Corel Corp. — benefit if Microsoft moves to an HTML-standard document format?

Harry Fenik, vice president at Zona Research, Inc. in Redwood City, Calif., said the change might make it a little easier to exchange information among suites and maintain formats, but users would still be limited to using some form of filtering system.

Although Microsoft was light on details, the company said it would use a combination of HTML and Extensible Markup Language to embed some information that is accessible only by Microsoft products.

Jim Burks, engineering manager at Harrah's Entertainment, Inc. in Memphis, said he doesn't think HTML is any solution for interoperability between competing suites anyway.

"HTML is not as rich a format as the internal Word format or Ami Pro format," Burks said. "When we exchange information with someone who is not an Office user, we typically save in an older version of Word. Word is pretty much the lingua franca of the desktop."

Users of competitive products would have to use a filter to access all the information. Lotus' product, SmartSuite 97, already allows native HTML file support. Lotus' new Java-based eSuite developed for thin clients also uses HTML as its native file format.

But some users said the file format and interoperability played a smaller role to the user interface.

Lotus and Corel said they would welcome any moves Microsoft makes toward adopting a more open document format.

Microsoft officials maintain that the change is to address corporate intranets and that users will still overwhelmingly choose Office because of its ease of use and lower maintenance costs. □

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

1997 worldwide external storage revenue

Unix	$7B
Mainframe	$3.3B
Windows NT	$1.6B
Network operating system	$897M
OpenVMS	$523M
AS/400	$217M
Other	$2.7B
Total	$16.2B

Source: International Data Corp., Framingham, Mass.

DLT resale

Hewlett-Packard Co. in Palo Alto, Calif., will resell digital linear tape (DLT) libraries from Storage Technology Corp. in Louisville, Colo., as part of a $70 million deal announced recently.

HP will resell StorageTek's Timberwolf libraries to its HP 9000 customers looking for high-end tape storage systems.

HP cuts PC prices

Hewlett-Packard has cut prices across its line of HP Vectra VL PCs. An HP Vectra VL PC with a 166-MHz Pentium processor with MMX technology, 16M bytes of RAM and a 1.6G-byte hard drive now has an estimated street cost of $984.

PC control features

Dell Computer Corp. in Round Rock, Texas, has announced systems management capabilities for its OptiPlex line of PCs.

These features were designed to help business users manage and control their networked desktops.

They also support the Intel-Wired for Management baseline specification, which includes remote system boot and configuration capabilities and BIOS installation and administrator password capabilities.

Tools extend storage arrays

▸ EMC, others offer flexibility via software

By Tim Ouellette

NO BROKEN promises here.

Late last year, storage hardware vendors promised to spruce up their disk arrays with tools that extend the capabilities of the boxes. And now software onboard the disk system plays as important a role in storage strategies as the growing capacity of disk drives.

Software is giving users more flexibility in how they locate and store data, speeding up disaster recovery access and slashing timetables for large-scale projects such as year 2000 conversions.

"We were interested in [EMC Corp.'s] data sharing, but more important was the TimeFinder software we could get with the disk array for business continuance," said Jim Stirling, manager of technical services at Mortgage Guaranty Insurance Corp. in Milwaukee.

BACKUP FEATURE

TimeFinder lets users take a point-in-time data picture for backup. Stirling said he plans to use the tool for that purpose and also to create a year 2000 testing environment. "We can avoid renting space from an outsourcer, and instead we can play around on-site with updated data off-loaded by TimeFinder," he said.

Vendors promise more to come next year, especially in the areas of high availability and disaster recovery.

And even though the cost of these tools is high compared with falling hardware prices, users find them strategic enough to justify the expense.

In fact, by 2000, most of the value delivered by disk storage subsystems will be provided by

Tools, page 54

STORAGE GOES SOFT

A sample of disk subsystem-based software tools introduced or upgraded this year

Vendor	Product	Features
EMC	TimeFinder	Creates a third mirrored copy of real data
	DataReach	Unix data transfer at mainframe speeds
	SRDF Farpoint	Upgrade for longer distance between data centers
IBM	Ramac Snapshot Copy 1.2	Upgrade adds support for VSAM files
Hitachi Data Systems	Extended Remote Copy	Asynchronous data mirroring to remote sites
	On-Line Data Migration	Moves data from other arrays to HDS' 7700
	DataTune	Optimizes array for unbalanced workload

• Enhancement for data backup

Chip promises tape capacity boost

By Nancy Dillon

OVERLAND DATA, INC. has announced a chip that may double the capacities of linear tape drives — an advance that could mean users need to keep fewer tapes to back up data, users and analysts said.

Such drives include digital linear tape- (DLT) and Travan-based drives. They are used on desktops, with servers and in tape libraries.

STORAGE TECHNOLOGY

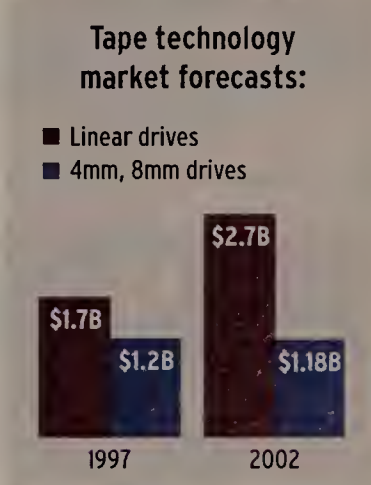
The chip could enable more performance for the price, analysts said. The chip is based on a proprietary encoding technology called VR2, which San Diego-based Overland hopes to license to manufacturers for use in late 1998 products.

"With [direct-access storage device] storage increasing all the time, the more data that can be fit on to tape, the better," said Richard Reed, regional director of information systems at Cigna Healthcare of Florida, Inc. in Tampa.

Reed said he has a mixture of DLT, 4mm and 8mm drives on his network but is moving to DLT drives because of their high capacities. "Anything that can allow you to reduce the number of drives on a network is a plus," he said.

Overland's chip works by reducing the amount of instructional information that linear drives need to follow recorded data paths. And reduced tape drive instructions mean more room on tapes for user data. Similar technology has already

Tape capacity, page 54



Source: International Data Corp., Framingham, Mass.

Many notebook users take a pass on further upgrades

Reasons some users aren't buying laptops

- Done with major upgrades planned in late 1996 and first half of 1997
- Satisfied with 133- and 166-MHz processors
- Rejecting pressure to upgrade constantly
- Waiting for Windows NT 5.0 and Windows 98
- Disgruntled with higher laptop prices

Source: International Data Corp., Framingham, Mass.

By Kim Girard

SOME CORPORATE USERS, content with their most recent notebook upgrades, are snubbing new models despite much-touted speedier processors, analysts say.

"The corporate market is saying the upgrades are coming too fast," said Randy Giusto, an analyst at International Data Corp. (IDC) in Framingham, Mass. "A lot of the corporate market is saying they don't need Pentium II."

Many users are satisfied with what they have or are waiting for their operating system upgrades to coincide with the capabilities of more powerful Pentium II machines that will support Microsoft Windows NT

Notebook, page 54

COMPARING TAPE DRIVES

Name	Type	Compressed capacity	Transfer rate	Price
Quantum DLT 7000	DLT	70G bytes	10M byte/sec.	$8,000
Exabyte Eagle NS8	Travan NS	8G bytes	1.2M byte/sec.	$499
Sony AIT SDX-S300	8mm	50G bytes	6M byte/sec.	$4,699

Tape capacity boost

CONTINUED FROM PAGE 53

been implemented in linear tape's competing platform, helical scan. Helical scan drives include 4mm and 8mm drives.

INTEGRATION KEY

Bob Amatruda, an analyst at International Data Corp. in Framingham, Mass., said the key to VR2's impact will be its ease of implementation. He warned that if the chip isn't easily integrated into existing products, manufacturers might resist licensing it.

"I think VR2 technology is very important," said Mike Peterson, president of Strategic Research Corp. in Santa Barbara, Calif. "The logic is simple. Along comes a technology that gives you an instant two-times boost, is applicable to all linear tape, and the cost is trivial. Quite a few manufacturers that I know of are looking at it."

Peterson also said that if VR2 lives up to its potential, it will enable the Travan Network Series (NS) format to be the next market growth leader. Travan NS is the latest version of the low-cost Travan format originally developed by Imation Corp. in Oakdale, Minn.

A Travan NS drive offered by Boulder, Colo.-based Exabyte Corp., called the Eagle NS8, has an uncompressed capacity of 4G bytes and costs $499. If that capacity were doubled by VR2 technology with only a slight price change, Travan NS would cost about 7 cents per megabyte, VR2-enabled DLT would cost about 12 cents per megabyte, and the cost of 8mm tape would remain at about 18 to 20 cents per megabyte.

Paul Gedmin, data center manager at the Florida Keys Aqueduct Authority in Key West, uses 4mm drives from Palo Alto, Calif.-based Hewlett-Packard Co. on two HP Unix servers and one NT server.

Gedmin said enhancements to linear tape are important to him because he is looking at linear tape for Windows NT system backup. "But we would stick with whatever HP recommends because it's more important that we have a good relationship with our major OEMs in case we run into problems or need to go back and read tapes that are 3 years old," he said. □

Tools extend storage arrays

CONTINUED FROM PAGE 53

DISK SYSTEMS

software and subsystem interconnection, according to recent research by Nick Allen, an analyst at Gartner Group, Inc. in Stamford, Conn.

For example, BankBoston Corp. factored in the cost of previous downtime suffered before using EMC's Symmetrix Remote Data Facility (SRDF) to move data to a new data center. The bank determined that the resulting software costs would be minimal, said Jack Blanchard, a systems consultant at the Boston company.

Use of SRDF is limited because BankBoston completed a major data center migration last summer, but Blanchard expects to see more use next year when the bank moves data to an off-site location for disaster recovery.

LEADING THE WAY

Hopkinton, Mass.-based EMC, one of the pioneers to add software to storage subsystems, this year introduced two tools for its Symmetrix arrays — DataReach and TimeFinder. It and updated SRDF last month to extend its geographic reach.

Company officials claim to have sold 2,000 SRDF licenses and expect software-based sales to jump from $75 million last year to $200 million this year.

But EMC isn't alone (see chart page 53). Hitachi Data Systems Corp. in Santa Clara, Calif., has come out with similar software support on its 7700 disk arrays. And IBM updated its popular Snapshot Copy software last month to support mainframe VSAM files, which constitute nearly half of all mainframe data.

The storage tools use the disk array's high-speed, proprietary backplane to move data instead of relying on corporate networks and servers. Users thereby save valuable processor cycles on the host server or mainframe. That is crucial because a recent survey by Find/SVP in New York revealed that 43% of data center managers say data transfer operations are sucking up 20% of their mainframe processing power.

The savings translate into more time to battle batch windows and make production systems more accessible to users.

"With Snapshot Copy, we have been able to cut down on our backup window at the end of the day, then start up our production runs earlier," said Dick Fernandez, assistant vice president of computing services at Insurance Services Office, Inc. in Pearl River, N.Y.

The firm is storing and backing up nearly 1T byte of data with the combination of Snapshot and IBM's Ramac Virtual Arrays. □

Notebook upgrades

CONTINUED FROM PAGE 53

5.0. The new Pentium II models are due next spring.

Nonetheless, Intel Corp. plans to announce its 266-MHz mobile processor Jan. 12. The announcement comes nearly four months after Intel's rollout of the Tillamook processor, which boosted speeds to 200 MHz and 233 MHz.

New 266-MHz notebooks, with a starting cost of about $4,000, are expected to begin shipping next month.

SLOW DOWN THE PACE

"I'm not going to let them push us into getting something we don't want," said Joe Quon, notebook product manager at Pacific Gas & Electric Co. in San Francisco, which has about 3,000 notebook users.

Quon said he is evaluating and starting to order Dell's 233-MHz Latitude XPi laptops for next year. "For us, the pace [of upgrade] is a little fast. We're just starting to migrate to Windows 95 and move an older Banyan system to a Windows NT network," he said.

Quon, who said he takes eight months to a year to evaluate before committing to a new notebook line, said a machine's weight, battery life and screen size is more important to users than the speed of a processor.

According to an IDC survey of 500 small to midsize companies, 43% completed large-scale upgrades of their installed base in the second half of last year and the first half of this year to 133- and 166-MHz machines, up from the 22% that typically upgrade over similar time periods.

Fewer laptop purchases late this year will contribute to a 5% decline in worldwide PC sales expected in the fourth quarter, Giusto said.

For many users, 166-MHz machines are "extremely fast and extremely usable" and $250 cheaper than a machine with a Tillamook processor, said Phillip Redman, an analyst at The Yankee Group consultancy in Boston.

"Upgrades are notoriously expensive," said Bradford Bingel, information services director at Shorenstein Co. in San Francisco.

The fastest of Shorenstein's notebooks from Hitachi PC Corp. in San Jose, Calif., and Toshiba America Systems, Inc. in Irvine, Calif., have 166-MHz processors.

"We just don't want to put the money into them at this time," Bingel said. A 100-MHz Pentium processor is "more than adequate" for the majority of Shorenstein's users, he said. □

One Source...
All the Answers.



Find, compare and qualify software and suppliers fast! The Manufacturing Enterprise Applications™ Comparison CD-ROM.

Created by industry experts at Managing Automation, this CD-ROM is the BEST resource tool available for identifying and evaluating supply chain, business or manufacturing management sofware

You'll get comprehensive descriptions on:

- Over 150 systems within 40 application areas.
- 7,000 system functionalities.
- Supplier information on installed base, pricing and more.
- Plus, a powerful search engine and two, time-saving wizards for developing system specs, identifying systems compatible to your criteria and issuing customized Requests for Proposal.

MANAGING automation SOFTWARE GUIDES
Managing Automation Software Guides
A Unit of Thomas Publishing Company

Put it to the test.
Request your FREE demo now!
Download immediately from our Web site at www.masg.com or call 1-800-647-1908.

Mobile Computing

Special Section: Remote Access • Portable Computers • Mobile Strategies

Briefs

Work-at-home surges

The work-at-home market in the U.S. continues to boom, expanding to 34.7 million homes this year, up 15.6% from 1995, according to a report from International Data Corp. in Framingham, Mass.

Telecommuters and people who work from home after hours numbered 26.4 million, almost double the total in 1995. After-hours workers made up the greatest gain and now outnumber telecommuters for the first time, the study said.

Mobile cash by phone

Nortel, Inc. in Calgary, Alberta, will launch an experiment early next year to include smart-card technology in its touch-screen telephones. VeriSmart, from VeriFone, Inc., will let consumers use electronic cash from a home phone. Nortel is considering rolling out a commercial product incorporating the VeriSmart technology next year.

Handheld E-mail

Advansys Corp. announced a synchronization tool that links Psion, Inc. handheld computers with Novell, Inc.'s GroupWise groupware.

LinkWise 2.0, now shipping, allows Psion handheld computer users to synchronize their appointments with GroupWise in the office. Psion users can also write and send GroupWise electronic mail.

How many handhelds?

Worldwide share of handheld PCs shipped in the first half of this year

3Com (PalmPilot)	66%
Hewlett-Packard	11%
Apple Newton	5%
Casio	5%
Philips	4%
Compaq	2%
Other	7%

Total shipments: 842,000

Source: Dataquest, San Jose, Calif.



"We were living in the Dark Ages" before going to Internet backup, says Greylock Management's Mary Murphy

MARK OSTOW

'net backup goes mobile

By Nancy Dillon

MARY MURPHY, chief financial officer at Greylock Management Corp. in Boston, can remember worrying about protecting the data stored on her company's 15 laptop computers.

Eighteen months ago, the venture capital firm had no strategy for backing up notebooks that staff took on the road, Murphy said. The company used desktop tape drives and Zip drives from Roy, Utah-based Iomega Corp. to back up systems in the office.

"We were living in the Dark Ages. Someone always had to remember to pop a tape or cartridge in, and it was difficult to ensure that everyone was being protected," Murphy said.

To protect the company's laptop-based data, Murphy and her colleagues decided on an Internet-based backup service offered by Connected Corp. in Framingham, Mass. Greylock's data is stored on hardware

'net backup, page 56

Leased laptops solve disposal issue

▸ Eliminate cost of donating, refurbishing

By Kim Girard

USED LAPTOPS. Users have tried to throw them out, and they have tried to give them away as a tax write-off. Now a growing number of companies are turning to leasing as a way to sidestep the disposal nuisance and keep their models up to date.

"Leasing handles the problem of what to do with this junk after 36 months," said James Campbell, a laptop help desk adviser at the California Compensation Insurance Fund in San Francisco, which leases 900 Dell Computer Corp. laptops.

Campbell said he is still trying to find a way to recycle old notebooks that are scattered in the office closets of auditors and adjusters across the state. "You can't sell them to employees, you can't fit them with new applications, and we can't donate them. No one wants them without Windows 95," he said.

Nationwide, corporations now lease about 10% of their notebook and desktop PCs, a number that is expected to jump to between 15% and 20% next year, according to International Data Corp. (IDC) in Framingham, Mass.

Leasing eliminates the time-consuming expense of scrubbing a hard drive and removing software and sensitive information before donating or passing the machine on to another user — and the administrative overhead of organizing donations.

Laptops, page 56

Organizations that recycle laptops

- Gifts in Kind America
  (703) 836-2121
- East-West Education Development Foundation
  (617) 261-6699
- Non-Profit Computing
  (212) 759-2368
- National Computing Recycling/Mentoring Association
  (301) 229-7391
- USA CityLink Project: Floppies for Kiddies
  (504) 898-2158

REVIEW▸

Win CE 2.0 handhelds are good fit

By Chris DeVoney

WITH BETTER displays and closer compatibility with Windows, the new generation of Microsoft Corp. Windows CE 2.0 handheld PCs are better companions for the desktop computer than were their CE 1.0 predecessors.

After examining preproduction versions of Hewlett-Packard Co.'s $895 620XL and NEC America, Inc.'s $795 MobilePro 700, I found that the new units are faster, more capable and easier to use with Windows, and they offer more form-factor choices than the CE 1.0 machines.

Warning: Buying any CE 2.0 handheld right now is almost impossible, and it will be a

Review, page 56

REVIEW▸

Windows CE 2.0

CONTINUED FROM PAGE 55

month or so before you can get one. Units either aren't yet in production or are being produced in a limited way. Also, be aware that if you buy a handheld running CE 1.0, you can upgrade to CE 2.0, but you won't get the full functionality that you would with a device designed for 2.0. For example, CE 2.0 supports color displays, which weren't available on the 1.0 generation of hardware.

CE 2.0 doesn't resolve all problems associated with handheld computers. These units are still best for people who must combine electronic organizer functionality with the ability to view and edit Microsoft Office documents in a sub-$1,000 handheld form factor.

Windows CE 2.0, announced in September, is Microsoft's evolving embedded platform for a variety of devices: handhelds, game consoles, smart telephones, set-top television boxes and others. The new units take advantage of more and faster processors for CE and, in the case of handhelds, cheaper hardware. The RAM supported by hardware manufacturers typically is doubling from between 4M and 8M bytes to between 8M and 16M bytes.

The new units overcome the harshest criticism of 1.0 machines, the inferior LCD. The 2.0 machines generate 32-bit color internally and, depending on the model, display a very readable 16 shades of gray or 256 colors on the internal LCD panel. But the small display size can be a strain to read. If you use TrueType font support, applications such as Microsoft Word can zoom in on a document, and Pocket Internet Explorer can increase its font size. However, a zoom-in and zoom-out control in the operating system — such as that on Psion, Inc.'s Psion 5, which affects the entire display — would be more welcome.

Another major weakness of handhelds in general, their cramped keyboards, still exists. But the HP 620XL offers slightly larger keys (usable but not touch-typeable), and the NEC MobilePro 700 offers an almost full-size keyboard.

Limited support for functions found in desktop applications, is less of an issue with CE 2.0 than it was with CE 1.0. For example, CE 2.0 can accurately convert tables in Word into tab-delimited data and back. Pocket Excel now incorporates virtually all of Microsoft Excel's functions, including data functions.

A Pocket PowerPoint viewer lets you show slides and speaker notes side-by-side on the unit's display while projecting the slides through an optional external VGA adapter plugged in to the PC card slot.

Most CE devices now use a standard-size lithium-ion battery that delivers six hours of full use or an extended version that lasts about 11 hours. In addition to the serial and infrared ports, most units offer a 33.6K bit/sec. modem and a PC card slot.

Also, all 2.0 units can print documents via the serial or infrared ports. Windows CE 2.0's continuous data synchronization lets you disconnect the handheld from the desktop within seconds of altering data and know the handheld is up to date. You can also synchronize a handheld with two desktops, such as a home PC and an office PC.

And CE 2.0 offers most of the electronic-mail and scheduling services available in Microsoft Outlook.

In general, the handheld PCs based on Windows CE 2.0 handle their desktop companion chores well.

But the cost is relatively high, and the small form factor still imposes some ergonomic compromises. These handhelds won't replace all notebooks, but more mobile workers should benefit from their improvements. □

DeVoney is a freelance writer in Seattle. He can be reached at cdevoney@connect.com.

PRODUCT REVIEW▸ *Windows CE 2.0*

OVERALL GRADE B-

MICROSOFT CORP.
www.microsoft.com

Price: Bundled with hardware



Pros: More like Windows than release 1.0 was; better integration with desktop

Cons: Functionality still limited by handheld computer hardware

Laptops

CONTINUED FROM PAGE 55

But the option isn't for everyone.

David Eisenlohr, vice president of data center operations at Pacific Exchange Co. in San Francisco, said the stock exchange recently decided to keep buying.

"We felt that it was appropriate to purchase so we can hand down the laptops," he said. He noted that giving older machines to people who aren't power users expands their life to up to three and a half years.

WHERE THEY GO

About 40% of 250 large corporations surveyed by IDC said they hand down machines to "junior" users, at a cost of up to $400 per user to reconfigure a machine. Another 22% of the companies donate the laptops, and 11% throw them away.

John L. German, director of Non-Profit Computing, Inc., a New York-based organization that donates systems to schools and the needy, said the group's laptop donations are small: about one to every 20 desktop systems. Many companies still throw the machines out instead of donating them because laptops often develop simple but expensive repair problems, including cracked screens or broken keys, German said.

"The simplest thing to do in a corporate setting is shove it out on a loading dock and pay someone to haul it away," German said. "The people involved often know that these machines are good and useful, and they feel morally appalled, but they sometimes get forced to throw them out."

The biggest problem with used portables is that, in many cases, their hard drives aren't as easy or accessible to upgrade as desktops, said Nathan Nuttall, an analyst at Sherwood Research, Inc., a Wellesley, Mass.-based consultancy. That leads many corporations to just toss the machines after 24 to 36 months.

"The problem is by the time [a laptop] reaches the end of its life for a company, it's not good enough for the typical home computing program," said Rob Spoor, a PC/network analyst at McKesson Corp., a pharmaceutical and health care management provider in San Francisco. McKesson often resells laptops to employees or donates them to charity, Spoor said. □

'net backup pays off

CONTINUED FROM PAGE 55

at Connected's facility for a monthly byte-based fee. Murphy said the service software can automate backup as part of a user's close-down sequence, or it can be done manually any time a user hooks up to the Internet or the office network.

Analysts said user worries regarding laptop data backup are warranted. Now that laptop hard disk drives average 2G bytes, the old challenge of providing enough storage for users who want to use laptops as their primary PCs is giving way to the new challenge of backing up laptops that have replaced traditional office systems.

"By and large, company notebooks are not getting backed up," said Fara Yale, an analyst at Dataquest in San Jose, Calif. "And looking at the growing capacities, it's almost certain that laptop users are working with valuable . . . data that needs efficient and reliable protection."

Greylock has had one case of a fried laptop hard drive that tested its service's reliability. Murphy said a CD that Connected sent with the hard drive's backup files restored the entire system. "It worked well, and it made our users feel more secure. They know now that if they do Internet backups of the data they're getting on the road, they'll be safe," Murphy said.

Pittsburgh-based SafeGuard Interactive, Inc. offers a similar Internet backup service. It charges a flat annual fee, and like Connected, it backs up only files that have been changed.

Kim Medlin, a vice president at Atlanta Custom Homes, Inc., uses SafeGuard's service. He said he decided to move from tape backup to an Internet-based system because of maintenance. "I don't make any money when I'm managing my own backup tapes," he said. Medlin pays about $10 per month for nightly backups of his 2G-byte system.

The Internet-based backup market is in the early growth stage, said Mike McGuire, a mobile computing analyst at Dataquest. "Internet backup services have the potential to be as ubiquitous as car floor mats," he said. "If they become an additional service offered by the major [Internet service providers] for under $25 a month, they'll be very attractive for the comfort that they provide."

NOT AN ISSUE

And although users may have to contend with lost Internet connections or faulty telephone lines, security shouldn't be a big issue for most users because most services use strong encryption and password protection, McGuire said. Murphy said she is pleased with the encryption offered by Connected. "We have a lot of sensitive information, but I'm not worried," she said.

For those laptop users who still demand extra disk storage, removable drives are an option.

Michele H. Goldschmidt, a health education coordinator at Kaiser Permanente who serves 24 Middle Atlantic hospitals from her Rockville, Md., base, uses a Shark external hard drive from Avatar Peripherals in Milpitas, Calif.

The Shark is about the size of a computer mouse, weighs 9.7 oz. and uses 250M-byte removable disks. "By moving my presentations and education pamphlets to Shark disks, I don't have to worry about clogging up my hard drive," she said.

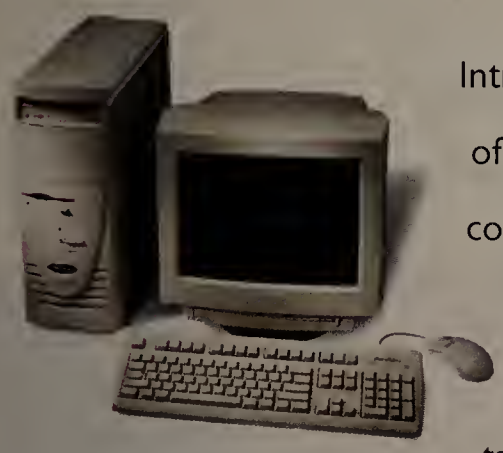
Chris Lahiff, a LAN administrator at Catalina Marketing Group in St. Petersburg, Fla., said a quarter of his 100 laptop users seeking extra storage use external Iomega Zip drives.

"The biggest benefit is that the 100M-byte Zip disks let laptop users swap out presentations," Lahiff said. "And when our users need different files as they travel from city to city, we can send out different Zip disks to their hotels."

Iomega recently announced availability of a notebook version of its internal Zip drive. □



THE NEW CLIENTPRO IS REDEFINING REMOTE CONTROL.



Introducing the latest, high-performance member of the Micron™ ClientPro® family, the 766Xi. It's a completely managed desktop driven by the new Intel LX AGPset, Pentium® II processor power (featuring MMX™ technology). The 766Xi takes Micron's ClientPro stability to a new level of business computing. High-powered multimedia capabilities in a network ready machine. Plus, all Micron ClientPro PCs arrive custom configured. Easy to set up. Easy to expand. And easy to network. All backed by award-winning 24-hour customer service, technical support and one of the best limited warranties in the business. So if you're looking for the best combination of performance, stability and price, it's time to switch to the ClientPro 766Xi.

MICRON CLIENTPRO VXE

Intel 166MHz Pentium processor with MMX technology
32MB EDO RAM, support for SDRAM
1.2GB SMART EIDE hard drive
15" Micron 500Lx, .28dp (13.7" display)

STANDARD FEATURES
512KB pipeline burst cache, flash BIOS, DMI Support
24X EIDE variable speed CD-ROM drive
3Com 3CS09 ISA Ethernet T-P NIC
S3 ViRGE graphics accelerator, 2MB EDO RAM
Microsoft® Mouse
Microsoft Windows® 95
5-year/3-year Micron Power℠ limited warranty

$1,399
Bus. lease $49/mo.

MICRON CLIENTPRO MRE

Intel 200MHz Pentium processor with MMX technology
64MB SDRAM
2.1GB Ultra ATA SMART EIDE hard drive
15" Micron 500Lx, .28dp (13.7" display)

STANDARD FEATURES
512KB pipeline burst cache, flash BIOS, DMI 2.0
3.5" floppy drive
24X EIDE variable speed CD-ROM drive
Network Adapter w/Wake On LAN technology
S3 ViRGE graphics accelerator, 2MB EDO RAM
Microsoft IntelliMouse™
Microsoft Windows 95
Intel LANDesk® Client Manager
Advanced Hardware Monitoring and Power Management features
5-year/3-year Micron Power limited warranty

$1,699
Bus. lease $59/mo.

THE NEW MICRON CLIENTPRO 766Xi

Intel 266MHz Pentium II processor (featuring MMX technology)
64MB EDO RAM, 3.5" floppy drive
3.2GB SMART EIDE hard drive
17" Micron 700FGx, .26dp (16.0" display)

STANDARD FEATURES
512KB internal L2 secondary cache, DMI 2.0 compliant
24X EIDE variable speed CD-ROM drive
SoundBlaster™ 16-bit stereo soundcard with speakers
Network Adapter w/Wake On LAN technology
PCI 64-bit 3D video, MPEG, 4MB EDO RAM
Microsoft IntelliMouse
Microsoft Windows NT® Workstation
Intel LANDesk Client Manager
Advanced Hardware Monitoring and Power Management features
Chassis Intrusion Alert
5-year/3-year Micron Power limited warranty

$2,599
Bus. lease $89/mo.

Call now to order.
800•214•6676
www.micronpc.com

MICRON POWER℠ WARRANTY

5-year limited warranty on microprocessor and main memory
3-year limited parts-only system warranty
1-, 2- or 3-year optional on-site service agreement for Micron desktop and server systems
30 days of free Micron-supplied software support for Micron desktop systems; 3 optional network operating system incident resolutions included for Micron server systems
30-day money back policy
24-hour technical support

The foregoing is subject to and qualified by Micron's standard limited warranties and terms and conditions of sale. Terms and conditions of sale may vary for specific configurations. Copies of the limited warranties may be obtained on our Web site or by calling Micron.

GSA Contract #GS35F4317D

Micron Sales Hours: Mon-Fri 6am-10pm, Sat 7am-5pm, Sun 10am-5pm (MT) Technical Support Available 24 Hours A Day-7 Days A Week. · Toll free from Mexico: 95-800-708-1755 · Toll free from Canada: 800-708-1758 · Toll free from Puerto Rico: 800-708-1756 International Sales: 208-893-8970 · International Fax: 208-893-7393

©1997 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions or errors in typography or photography. All purchases are subject to availability. Prices and specifications may be changed without notice; prices do not include shipping and handling and any applicable taxes. 30-day money-back policy does not include return freight and original shipping/handling charges, applies only to Micron brand products and begins from date of shipment. All sales are subject to Micron Electronics' current terms and conditions of sale. Lease prices based on 36-month lease. The Intel Inside Logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Microsoft, Windows, Windows NT and the Windows logo are registered trademarks of Microsoft Corporation. Product names of Micron products are trademarks or registered trademarks of Micron Electronics, Inc. or NetFRAME Systems, Inc. Other product names used in this publication are for identification purposes only and may be trademarks of their respective companies.

MICRON ELECTRONICS™
THINKING OUT OF THE BOX

Managing

THE LEADERSHIP EDGE

Do you want to be a true leader?

Noel Tichy, author of *The Leadership Engine: How Winning Companies Build Leaders at Every Level*, says real leaders teach others to be leaders, and that requires ideas, values and a quality he rarely sees in IS. He calls it "edge."

Noel M. Tichy knows leadership. For 25 years, this University of Michigan Business School professor has studied America's top business leaders up close, worked with people such as General Electric Co. Chairman and CEO Jack Welch and taught leadership as director of the university's Global Leadership Program. Tichy co-authored *Control Your Destiny or Someone Else Will*, the landmark book about Welch, and ran GE's renowned leadership training program. Now he's summarized what he's learned and put together 100



MARC BERLOW

"Leadership is very simple. Your job as a leader is to take the assets you are given today and make them more valuable for tomorrow," Noel Tichy says

pages of leadership development exercises in his new book, *The Leadership Engine: How Winning Companies Build Leaders at Every Level.*

Tichy spoke about why leaders must develop other leaders and the state of leadership in the information systems world with *Computerworld*'s Allan E. Alter. The following is an edited version of the conversation. Additional excerpts (including jibes at outsourcing, *Dilbert* and learning organizations) and audio clips from the interview can be found at *www.computerworld.com*. Look under Features.

CW: A big part of your new book must be lessons that great leaders have taught you.

TICHY: Absolutely. I learned they all buy in to the notion that you win by developing leaders in all levels of the organization. That is something you absolutely cannot outsource to consultants and professionals. It is a mainstream responsibility. Therefore, guys like Andy Grove at Intel [Corp.] teach orientation. Larry Bossidy [CEO at AlliedSignal, Inc.] was teaching and interacting directly with 15,000 people the first year he became CEO.

The classroom is only the tip of the iceberg. Jack Welch organizes his strategy reviews, budgeting reviews and people reviews to be real-time coaching sessions. Larry Bossidy follows up every strategy session with a two- to three-page letter to his direct reports. It's a coaching, teaching document. So if you really analyze the use of their time and their resources, the majority of it, the single most important activity, is developing the leader.

CW: And that's why you say teaching is at the heart of leading.

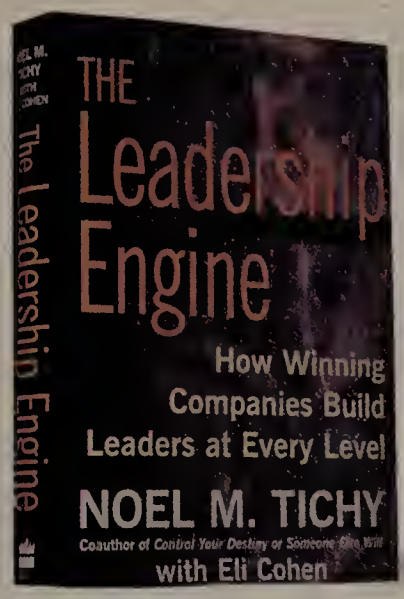
TICHY: Absolutely. And it requires them to have what I call a "teachable point of view."

CW: What do you mean by a "teachable point of view?"

TICHY: Well, I use an example from sports. I say look, Michael Jordan is one heck of a basketball player. We don't know whether Michael Jordan can coach. A guy like [Chicago Bulls coach] Phil Jackson has a teachable point of view at coaching. He has ideas about how to play the game, he has a set of values, he's got a way to energize players and he has the capacity to make the yes/no decisions about who plays when and so forth.

The same thing with a business leader. You have to have three things: ideas, values and what I call "e-cubed," which stands for emotional energy and edge. Leaders create positive emotional energy in people. The third "e" is edge. You've got to face reality and make the yes/no decisions about people, about products, about investments. Not study it or call in McKinsey & Co. for six months, but make the yes/no decision and move on.

You have got to be able to emotionally energize people. If you are Jack Welch and have 250,000 people, you don't only do it face-to-face. You have to invent ways to energize people, like getting everyone involved in his "Work Out" effort ["Work Out" is a series of off-site Town Hall and problem-solving meetings at which GE staff come up with ideas to kill bureaucracy and improve the organization. Leaders must accept or reject the ideas on the spot.] or like training the top 5,000 people at GE [to] be change facilitators in the company's change acceleration program.



In his new book, Tichy includes 100 pages of leadership development exercises

CW: What part of this do you find hardest for people to grasp?

TICHY: The one I find the toughest is edge. The others take some work and struggle, but the one that I think is hardest to develop in people is the toughness, the courage to make the yes/no decisions. One of the problems in our big, bureaucratic companies is you can get all the way to the top and never have to make yes/no decisions.

I did some consulting at Harlem Hospital in New York. I realized the most important leadership position there is the triage nurse. The triage nurse makes the yes/no decisions: "You get treatment now. You don't get treatment for five hours." Those are life-and-death decisions. If you had someone without a set of ideas and values to make those decisions, you'd be floundering. How do you develop triage nurses? Well, you certainly don't take them right out of nursing school. You start by giving them a set of experiences where the risks get higher and higher, but where you are forced to make yes/no decisions. You might work in a little community hospital, then work your way up.

CW: You write, "To some extent, every good leader is an a------." Frankly, IS professionals think there are enough a------- already in management.

TICHY: That comes from the opening page of the *Control Your Destiny* book. The quote was, "Jack Welch is the greatest CEO GE's ever had. Jack Welch is an a------." That comes off a flip chart at the first program Welch asked me to run in 1985, an orientation program for new off-campus hires.

When I went into a break-out room and saw that, I knew we were home free, because that was reality. Leadership is not about winning a popularity contest. It's about doing the right things. And early on in any transformation, the leaders are in the minority. They are going against the grain. Therefore, they are going to be seen in the eyes of many as an a------. Now, 15 years later, you will hardly find anybody who will call Welch an a------.

Leadership is very simple. Your job as a leader is to take the assets you are given today and make them more valuable for tomorrow. And in today's world, that means being able to creatively destroy the organization you've been handed. Because if there's one thing we know, it's not the right organization for tomorrow. And in the process of doing that, you're going to generate massive resistance to change.

CW: What have the great leaders you know said to you about leadership in IS organizations?

TICHY: During the last decade, most of the CEOs I've dealt with have been disappointed with IS. It's also reflected in the number of searches that require them to go outside. And what they complain about, in fact, is the lack of leadership in that function that drives shareholder value. [There have been] huge expenses and revolutionary change occurring in the industry, and they're getting a reactive, almost status-quo orientation out of the function.

The exceptions have been where a true leader with a fresh, teachable point of view ends up in that function. They are able to think like a true business leader. That means they understand how the company makes money and how that gets translated into the capital markets.

But far too often, the IT people attach their cart to a sick horse. And the sick horse is businesspeople who don't know what the heck they are doing in the business. So we design these information systems in a lot of companies that aren't tracking the right activities. If the IT people aren't businesspeople, they're not going to be asking the right questions or demanding that their clients know the right questions.

CW: Not a single leader you profile is in an IS organization. As a matter of fact, I see a lot of books on leadership, and they just about never discuss IT leaders, outside of CEOs of high-tech vendors. Why is that?

TICHY: I think it's staff functions in general. It's not just IT; finance and human resources are not profiled, either. The reality is their job is a support function.

CW: And, at the same time, you want these people to be leaders.

TICHY: It's work that ought to be done.

First, I want a business leader who understands the teachable point of view of the CEO — ideas, values, how they energize people — and then can build the enabling infrastructure for the company. If that doesn't exist at the top, then you are going to waste a lot of time and money and effort and misapply technology.

Then the IT people must develop a teachable point of view for their own function, to talk about the ideas in IT that are going to support growth, the values that will implement those ideas, how we will energize our people and the rest of the company on using this technology.

CW: Have you talked with IS people about leadership? What impressions did you come away with from those conversations?

TICHY: I've done a number of sessions with IS people, and my impression is they recognize the need for stronger leadership — they kind of nod their heads and acknowledge that this is the right stuff. But then it comes back to: Do they have the edge to acknowledge that this is a problem and make some yes/no commitments to doing something about it? The answer has basically been no. I don't see a lot of leadership development activities happening in IT right now, and I think there should be a lot more. □

Alter is Computerworld*'s department editor, Managing.*

RESOURCES FOR IS MANAGERS

Success, Satisfaction to the Max

Although he is retired, Max Hopper remains a legendary CIO, having played a key role in the development of American Airlines, Inc.'s Sabre, the first computerized airline reservation system. He later led The Sabre Group as a spin-off. Since 1995, Hopper has run his own Dallas-based consulting firm. He talked about several issues, including how to be a successful CIO, with John Windsor and Leon Kappelman, professors of business computer information systems at the University of North Texas in Denton. (The following is part of an interview published in the Spring 1997 issue of "Data Base," the quarterly publication of the MIS special-interest group of the Association for Computing Machinery.)


MAX HOPPER

Q. What four or five things must CIOs do right to succeed at managing an IT organization?

A. You have to think of the technology world that you're responsible for as a business. You have to run it as a business. That means you've got to make sure that the operational needs are satisfied. . . .

First, the reliability of existing systems. You just have to make that occur. Your credibility starts there . . . you may not get a lot of credit for doing it, but you'll get hell if it doesn't happen.

The efficiency of systems is also key. Some trends are in your favor in terms of the reduced cost of goods. But when you move toward client/server, if you move too quickly or don't have appropriate controls or support structures in place, it could end up costing you a lot.

The third piece is the marketing. Not only what you have done, but also what technology can do and how it can support the business. I feel like I've been a kind of middleman, selling ideas upward. . . . An obvious piece is trying to develop some strategic direction that matches with the corporate strategy and structure and tends to support a unified architectural solution.

Don't underestimate the cultural changes of implementing new technology solutions. If there's one fault that belongs to both CIOs and entire businesses, it's that they give maybe a day or two days of training on how to use the system without any real comprehension of the psychological impact and what it may mean to the person using it. What is that cultural change?

Q. To really be successful 20 years from now, what are the threats and opportunities to which CIOs and aspiring CIOs need to pay attention?

A. The biggest opportunity and threat posed is the senior management of the company you're associated with. If they still believe that computers are a necessary evil but just big calculators, you're not going to get very far. If their whole idea is to minimize costs and/or use them only where they barely substitute for totally measured dollars, that's not a strategic point of view. I'd also look at the broad value of information systems in the industry I'm in. If the industry is not using IT or doesn't need to use it intensely or effectively, your chances of breaking through or doing new things are low. Now if you find that kind of situation and the industry could be using it more, that may be the best of both worlds. You might be able to create something of real strategic value . . . . If your industry and your company recognize IT's value, then it's a question of how far you can go.

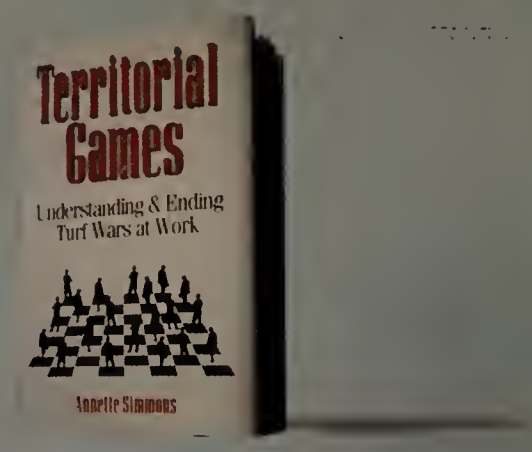
Q. What did you find particularly satisfying about being an IS professional?

A. It offers you the ability to see how business operates from all the aspects, from operational through strategic. If you're at all attracted to being a problem-solver, this is the place to be. The other aspect is it requires you to work with people. . . . IT solutions require people who can think conceptually, people who are committed. . . . It's those bright, exceptional and committed people who make any solution ultimately work. Just being part of that is so personally, intellectually and socially stimulating. □

BOOKSHELF

Territorial Games: Understanding and Ending Turf Wars at Work

By Annette Simmons; Amacom, New York; 222 pages, $22.95 (hardcover)



File this one under organizational views you can definitely use, especially if you're a manager.

CEOs, CIOs, IS managers and other higher-ups can raise *Territorial Games* as a white flag — and use it as a workbook — to ease the turf wars that increasingly flare up in today's downsized, short-staffed corporate world.

"When fights over limited resources and rewards siphon off the valuable creative juices of a workgroup or sabotage organizational goals, we usually have one standard response: We sit in someone's office or gather over a beer, and we gripe about it," Simmons writes.

Instead, she suggests, we must look at interoffice, interdepartmental battles in a more enlightened way — or risk company inefficiency and/or financial loss.

In *Territorial Games*, Simmons offers a folksy, first-hand look at how we all learn to "play the business game" when dealing with co-workers, bosses and clients. The book is a report on her research into territoriality: She interviewed more than 40 middle- and senior-level managers at mid-size (up to 100 employees) to large (1,000-plus employees) organizations. In loosely structured, hour-long sessions, she asked for examples of turf wars they had been involved with, for example, or for instances in which they had witnessed dysfunctional territoriality.

Simmons has divided this helpful, informative guide into three parts. Part I deals with the evolution of territoriality. She notes that the infighting, power struggles, office politics and ego battles in today's business organizations have worsened as companies have been forced to do more with less.

Today's turf wars are more about protecting our frail egos, she says. The first part of the book covers this theory in easy-to-understand detail. Simmons also explores the emotions involved with the territoriality instinct — such as anger and insecurity — and indicates that if the readers can acknowledge that instinct, they can then work around it.

Simmons devotes a chapter in Part II to each of the territorial games she posits as typical interpersonal struggles played out in today's work world. Examples culled from Simmons' interviews are used to support her back-biting theories. There are useful worksheets, chapter wrap-ups and reader Q&As at the end of each chapter, which managers can use to map out their own experiences with turf wars. The wrap-ups are a helpful tool for creating a solution for your organization.

Part III presents some practical recommendations for tearing down territorial boundaries in your organization and promoting harmony and efficiency among co-workers and departments.

— Roberta Fusaro

CONFERENCES

Want to catch a conference or two in mid-January? If you're interested in cryptography and the IS skills shortage, the Bay Area beckons.

National Information Technology Workforce Convocation

Jan. 12-13
The Claremont Hotel, Berkeley, Calif.
This national convocation will address the worker shortage in IS and offer task force forums to address it. The conference is sponsored by the Information Technology Association of America (ITAA), the U.S. Departments of Education and Commerce and a variety of firms and universities.
Cost: $225 for industry or corporate participants, $100 for nonprofits
Contact: ITAA, Arlington, Va.
(703) 284-5318

RSA Data Security Conference

Jan. 13-16
San Francisco (five venues)
The *sine qua non* event of the cryptography community. The eighth annual conference is expected to draw more than 3,000 people, who will get the lowdown on the latest research, product development, market analysis and social thought in cryptography.
Cost: $1,295
Contact: RSA Conference, LKE Productions
(800) 340-3010
www.rsa.com

Strategic Alignment of IT: Maximizing Value by Integrating IT with Strategic Planning

Jan. 20-21
Bourbon Orleans Hotel, New Orleans
This inaugural executive forum for top-level executives will feature case studies from leading organizations that are using IT for competitive advantage. The forum kicks off with a panel of six top IS managers talking about how a CIO can help bridge the gap between IT and strategy.
Cost: $1,495
Contact: International Communications for Management, Chicago
(312) 540-3010

For a complete list of IT conferences, visit our Web site at *www.computerworld.com*. Scroll down to Resources, and click on Conferences.

If good things truly come in small packages, maybe you should be suspicious of the gigantic process software provided by SAP, Baan, PeopleSoft and Oracle, among others.

PACKAGED SYSTEMS: ONE WAY TO FORCE CHANGE

JIM CHAMPY



Installing such humongous packages often can lead to equally huge headaches.

Common glitches include time and cost overruns, frustration when your company's processes don't fit the system design and the seemingly endless struggle to get processes and systems to work together. Sometimes those big systems efforts are abandoned; other times senior line managers grit their teeth as they spend tens of millions of dollars to make the systems work by brute force.

Those experiences prove what we have known all along: Big-time technology and process change can't be bought shrink-wrapped. And major efficiencies don't come from technology alone. Big payoffs happen only when underlying work processes change.

But read on, because I'm not categorically saying large, packaged systems can't work or shouldn't even be tried until a company's processes have been completely understood and redesigned.

DIVE RIGHT IN

Examining my own dogma, which is that a firm should carefully analyze how it wants to operate and then select a package, I've come to a surprising conclusion: Jumping in headfirst may be exactly what some companies need.

That notion comes after years of watching senior line managers struggle to make big change happen, often by trial and error. It isn't easy to find the change lever in a company. It often lies somewhere between fear and vision. And just getting change started can be problematic, particularly when a business is doing well and people don't see the need for change. So I haven't been shocked to see some managers just commit to an SAP (or similar) system as a way to launch their companies into the abyss of operational change.

It's a dramatic way of getting started — sort of the sink-or-swim approach to business transformation. The risks are that both information technology and line managers will underestimate what it will take to get the job done — in terms of highly skilled people, time and money — and that at least some process work must lead the implementation. Of course, there's the additional danger that the business might be harmed, but I hope people won't be that dumb.

The other benefit of a large-package approach is that it will confront you immediately with all that may have to change to really improve business performance. If, on the other hand, you take a slow and incremental approach to change, you may never see all that's required. There's no hiding from how big the effort is when you face a choice among the 8,000 variables, for example, that SAP demands.

Further, if you're serious about implementing change globally, a package approach may cause you to stop and get global agreement on how processes will work remotely. Usually managers come up with an idea in Boston, say, and then try to roll it out in Bangkok. At best, it will be rejected in Bangkok; more likely, you just won't hear anything. A large package can force you to contemplate the global scheme of things.

Now, to be clear, my preference and advice would be first to carefully redesign your new business processes and then decide whether to buy or build a package. Logically, you would change how your company operated as you changed the technology. In fact, if you don't have some understanding of how things really work in your company, you could make a big mistake in your choice of technology.

CONCRETE THOUGHTS

But the ultimate risk in the rush to buy or build big new systems infrastructures is that we may all be pouring the next big block of concrete.

Remember what we said about technology when we kicked off the reengineering revolution several years ago: The way business was done was virtually cast in concrete by the complexity of our systems. My first major re-engineering experience was at Hallmark, where it was very difficult to change how their retail shops operated because the underlying systems were so elegant and complex. Technology had become a block to, not an enabler of, change. What we need are highly adaptive systems.

What should worry you the most about the next version of SAP or the like is whether it's the technology approach that will give your company agility or whether it's just one big system replacing another. That's the question that should keep you up at night. □

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. His Internet address is JimChampy@ps.net. His newspaper columns are syndicated by Tribune Media Services.

f.y.i.

Study: Makers of consumer goods turn to IT to aid growth

Makers of consumer goods are turning to information technology integration to help drive business growth, according to a recent study conducted by Computer Sciences Corp. (CSC) and *Consumer Goods Manufacturer* magazine.

The second annual study of the industry found that companies use IT to help unite business functions and processes, to boost productivity and make their supply chains more efficient.

A near-majority (46%) of the respondents said the primary reason for investing in IT is to help support the company's growth plans.

Many of the companies, CSC says, have found that increasingly sophisticated information networks — particularly those involving groupware and intranets — and enterprise approaches can play a major role in linking such functions as research and development, manufacturing, logistics and sales and marketing. Nearly 40% of respondents said they're implementing enterprisewide systems. That's up from 24% last year.

"The alignment and integration of companies' technology strategies with those of the business are helping manufacturers achieve new levels of growth," says Mike Klaus, managing director of CSC's consumer goods and retail consulting practice in Cleveland.

CSC polled information systems managers at 122 organizations in the fashion, specialty, food and beverage and nonfood packaged goods sectors. The following are highlights:

- **Cost-cutting is still important. Nearly 75% cited "pressure to reduce overall supply chain costs" as one of the most significant market forces facing their companies. (That was cited as one of three chief concerns in last year's study.)**
- **Integrating systems remains the top IS concern of 57% of respondents.**
- **Forty-five percent reported increased IS budgets this year compared with last year, and 34% expected them to hold steady. (Last year, 39% anticipated increases, and 38% reported no changes.)**
- **Companies noting the existence of a corporate World Wide Web site rose from 33% last year to 62% this year. But very few said they use their sites for electronic commerce.**

Buyer's Guide

COOL '98 STUFF

COOLNESS KEY

WAY COOL

COOL

KINDA COOL

NOT SO COOL

TEPID

We scouted computer stores, elbowed our way through trade shows and picked the brains of experts to present some of the coolest gadgets and tools (OK, some are toys) on the market for the holidays and 1998. We tracked down the vendors and brought 37 products into our offices for brief, hands-on reviews by *Computerworld* writers and editors and even a few of the real techno-pros — the staff's kids. In the end, we tried to gauge each product's coolness (see Coolness Key at top). We couldn't fit everything in, so in many cases we chose products that are representative of several in their category. Some of these products your kids will love. Some the kid in you will love. Some are cool in idea only. Some will actually help you do your job. And some may be good last-minute holiday gift ideas.

PHOTOGRAPHY BY VITO ALUIA

CANON OPTURA

Canon Computer Services

www.canon.com

$2,499

Serious, and seriously affluent, photography enthusiasts who need a digital still-image camera and a digital camcorder can have both in Canon's Optura. Despite its mind-boggling complexity, this engineering marvel is a delight to use. For example, the FlexiZone AF control lets you focus on any part of an image, giving you flexibility in how you compose your snapshot. *Howard Millman*

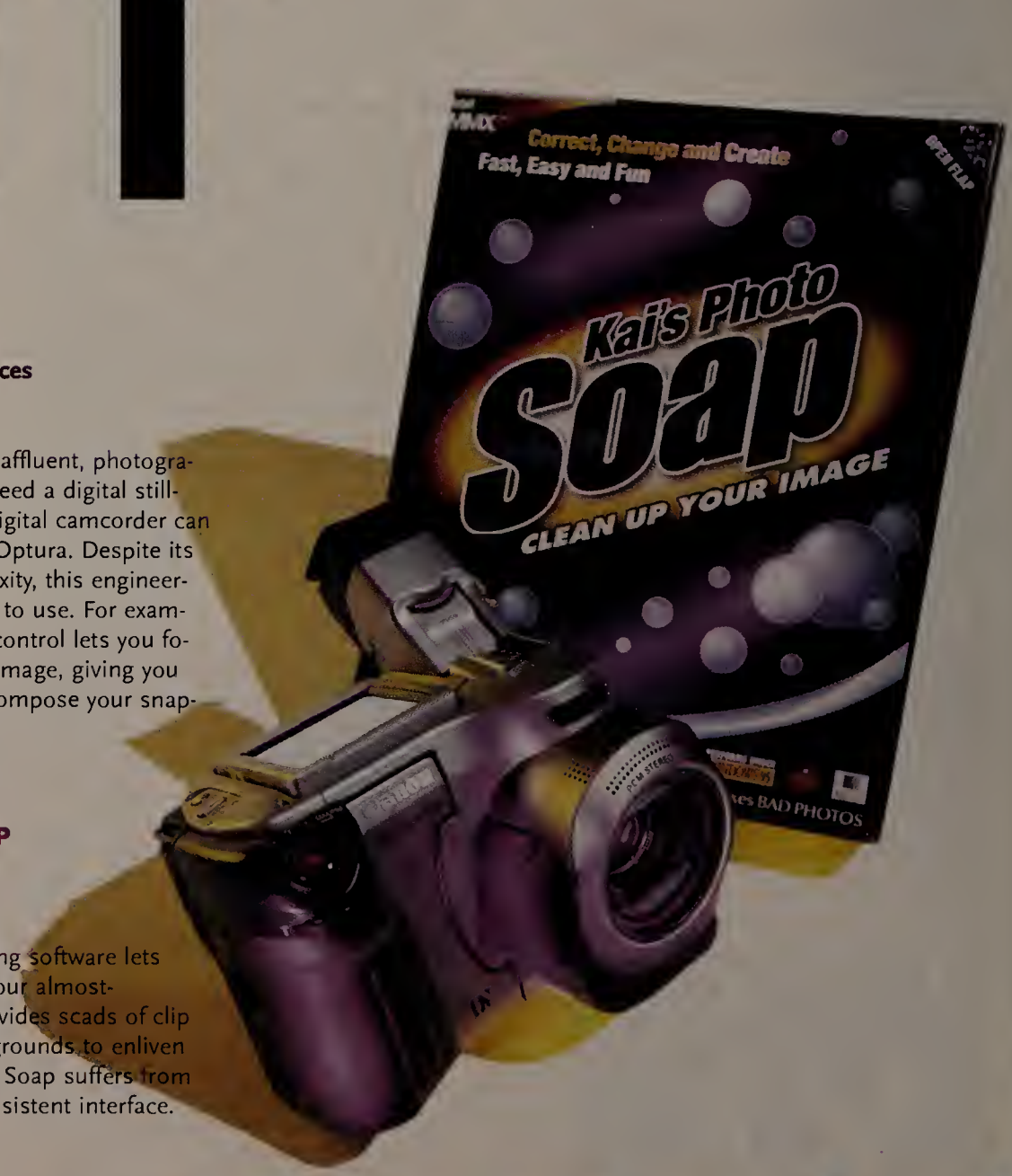
KAI'S PHOTO SOAP

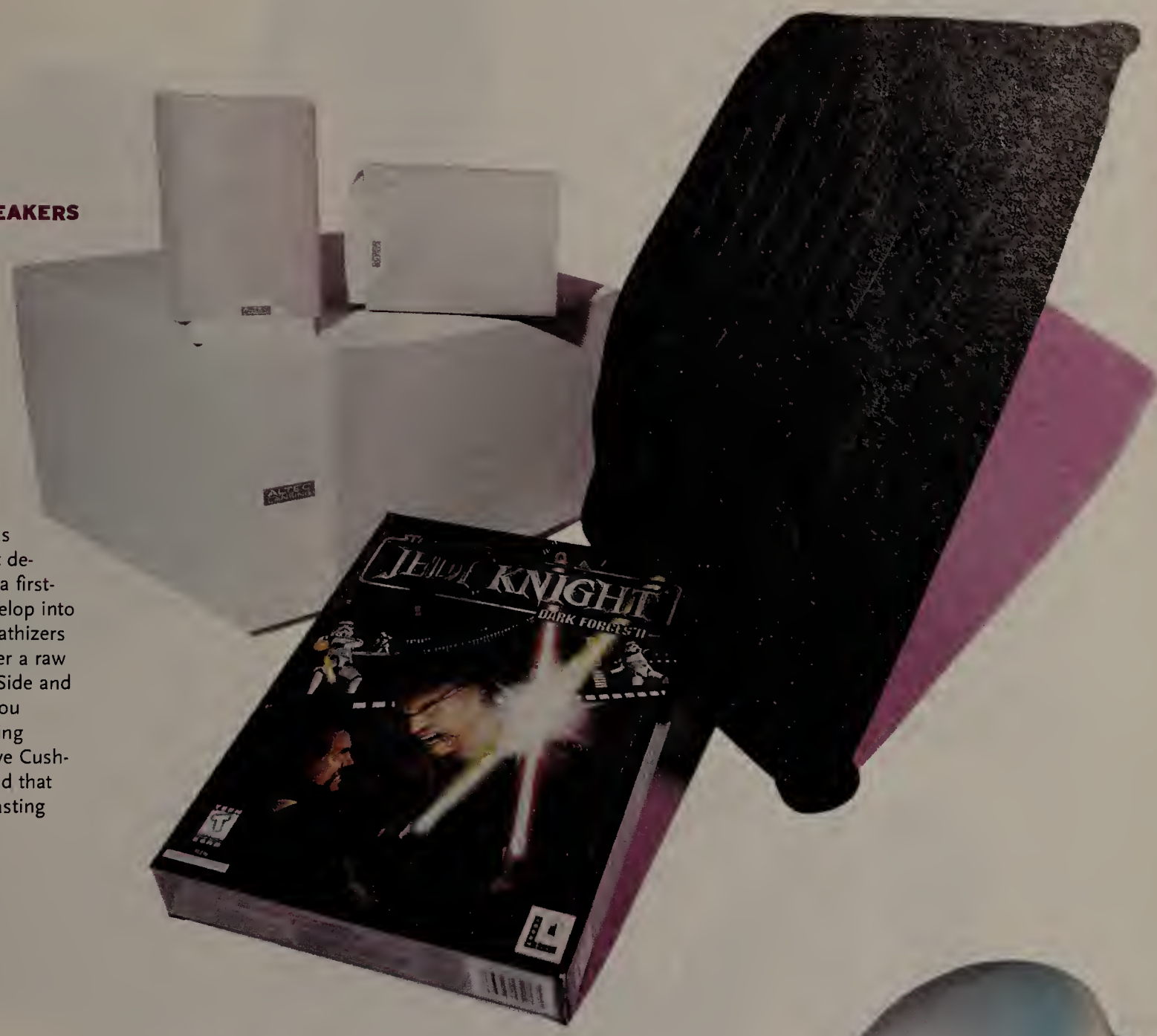
Meta Tools, Inc.

www.metatools.com

$49

Kai's Photo Soap editing software lets you skillfully reclaim your almost-perfect pictures. It provides scads of clip art, textures and backgrounds to enliven dull photos. Yet Photo Soap suffers from flaws such as an inconsistent interface. *Howard Millman*





▶ **STAR WARS JEDI KNIGHT DARK FORCES II**
LucasArts Entertainment Co.
www.lucasarts.com
$39.95

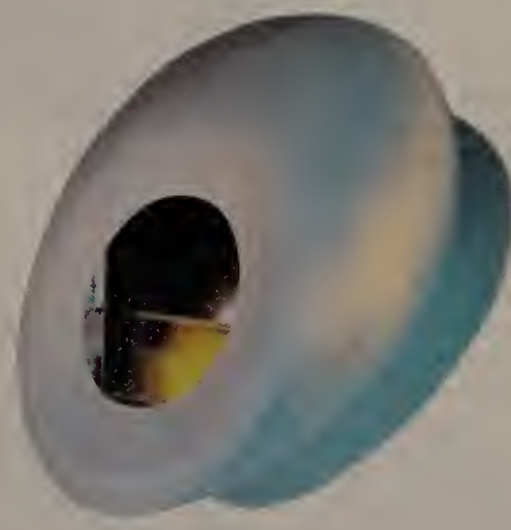
ACS48 POWERCUBE PLUS SPEAKERS
Altec Lansing Technologies, Inc.
www.altecmm.com
$150

INTERACTOR CUSHION
Aura Systems, Inc.
www.aurasystems.com
$99
Just hearing the action doesn't cut it for me anymore; I want sound that hurts. Altec Lansing's three-piece speakers deliver spectacular sound and clarity. Game soundtracks such as the one in the multiplayer Jedi Knight deserve that investment. This sequel is a first-person action game that lets you develop into a Jedi knight. For those Empire sympathizers who think the trilogy dealt Darth Vader a raw deal, you can cross over to the Dark Side and be as bad as you want to be. And if you launch a thermal detonator while sitting against the power-amplified Interactive Cushion, you'll know what I mean by sound that hurts as you feel the sound waves blasting through your body. *Kevin Burden*

▼ **TAMAGOTCHI**
Bandai America Co.
www.bandai.com
$15
I think it's important for adults to know that it's hard for them to take care of these virtual pets. It isn't hard for kids to take care of them. The photographer who took this picture didn't take good care of him. He let him die. A kid photographer would never have let him die. But if you bring it to school, you have to make sure to pause it. They are banned from my school. You have to feed them a lot, but it's fun to play with it. *Virginia Hunt, age 9*

Kid Parent

GAME.COM
Tiger Electronics, Inc.
www.game.com
$69.95
Game.com is like an electronic portable diary/video game. You can take it anywhere you go. It has a calendar, a telephone book, solitaire and a calculator and you can put game cartridges in it. I kind of liked it but thought the screen was too dark and that playing with it got boring after a while. *Jennifer Connolly, age 12*



BASS FISHIN'
Radica USA Ltd.
$20; found at many retailers
Hey, it's good for a laugh. This handheld electronic/mechanical game lets you cast your favorite lure and crank a reel handle in hopes of catching the big one. Then Bass Fishin' vibrates while you fight to land the fish. Adults will get bored in half an hour; kids will take longer. More dedicated fisher-folks might go for the PC-based Front Page Sports Trophy Bass ($29.95; *www.sierra.com*). *Jim Connolly*



▲ **BIOMOUSE**
American Biometric Co.
www.abio.com
$299
Easy to install and use, Biomouse adds an extra layer of security to your desktop or notebook by requiring a fingerprint scan to access the system and certain files. That's good for any user looking for tighter security, but the downside for mobile users is that it's an extra component to carry around. *Amy Malloy*

COOL STUFF '98

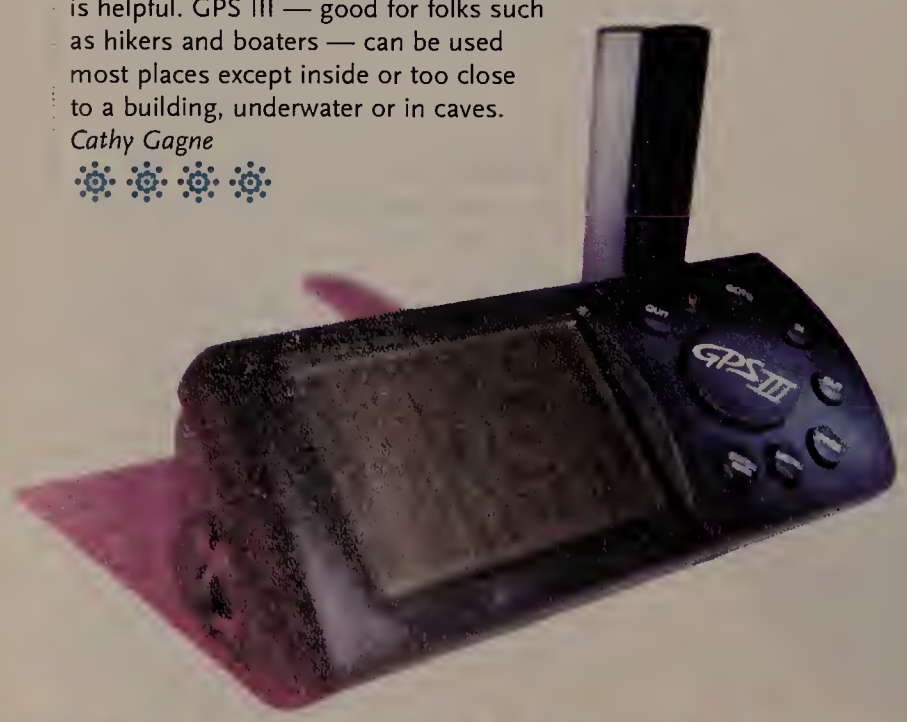


IBM CORDLESS COMPUTER CONNECTION
IBM
www.pc.ibm.com
$209 (estimated)
Ever been in a hotel room with your laptop and found that the phone jack is all the way across the room from the desk and under the bed? IBM's Cordless Computer Connection will help you solve that problem. It's easy to plug the base in to the phone jack and your modem in to the mobile remote pack, sit wherever you're most comfortable and dial in to your network. With a little testing, you can even sit out on the porch and surf to your heart's content. *Stewart Deck*

LOGITECH SURFMAN
Logitech
www.logitech.com
$99
The beloved remote control finally has made its way into the hands of Web surfers. To use this, you plug a little receiver in to your mouse port, run the setup, lean back in your chair and point, click and scroll. You can use it along with a Logitech wireless mouse so you don't have to go mouse-free. It works from up to 6 feet away (but can you read anything from there?) and is pretty nifty unless you have to type in a uniform resource locator. *Stewart Deck*



GPS III
Garmin Corp.
www.garmin.com
$571.80
Need help finding your way around? This handheld receiver with built-in maps will tell you where on Earth you are and, with some programming, can tell you how to get to your destination. The receiver draws data from the Global Positioning System (GPS) satellites. Programming isn't intuitive, but the manual is helpful. GPS III — good for folks such as hikers and boaters — can be used most places except inside or too close to a building, underwater or in caves. *Cathy Gagne*



DELORME AAA MAP'N'GO 3.0
DeLorme
www.delorme.com
$30 to $36

MICROSOFT EXPEDIA TRIPPLANNER 98
Microsoft Corp.
www.microsoft.com
$45 to $63

RAND MCNALLY TRIPMAKER 98
Rand McNally & Co.
$27 to $45
The latest generation of computer-based trip planners and street finders, including some competing and free Internet sites, is a 90% solution. You punch in your point of origin and destinations, and you get back detailed directions and maps. The flaws lie in some of the routes chosen and the limited number of hotels, restaurants and attractions the packages link to. In some cases, the suggested routes are downright funky, taking you perhaps 50 miles out of the way. One neat aspect is that these packages now tie in to GPS devices. TripMaker 98 has a slight edge for overall quality of directions and ease of use, but all three packages can be handy. *Jim Connolly*

THE TSUBO GLOVE
Interhealth
www.interhealth.com
About $15
You may look very weird if you try this at work, but the Tsubo Glove is a massage gadget to be used on or by your significant other to relax necks, shoulders and . . . well, whatever, after a hard day's work on your computer. The lightweight glove has dual oscillating motors that attach to your thumb and middle finger and can be charged up for full freedom of movement. *Cathy Gagne*





HOMEDIRECTOR
IBM
www.pc.ibm.com/homedirector
$99.99
This easy-to-use PC software works with special adapters for your wall sockets and light switches, sending on/off/dim codes through your home's electrical wiring to the appliances you want to control on a schedule you set through your PC. It's a small step toward the electronic house of the future. The only drawbacks seem to be that HomeDirector may be unforgiving if a family member needs to turn on a light before it's scheduled and that surge protectors don't get along with HomeDirector. *Jim Connolly*



TOTAL 3D
Canopus Corp.
www.canopus.com
$179
Even the most uber-techno-dweeb might have a few problems slipping on the 3-D specs that come with the Total 3D video card. But it's worth trying at least once. The effect of the LCD glasses is similar to what you might experience if a 1950s 3-D movie were playing in your head. Although the effect is cool, it can cause eyestrain. In fact, Canopus warns against letting children less than 7 or people who suffer epileptic seizures use the glasses. Another con may be a lack of support for the specs by game makers. Still, Total 3D is a blast. *Gordon Mah Ung*



VIDEUMCAM TRAVELER
Winnov, Inc.
www.winnov.com
$299
Installation of VideumCam, a notebook- or PC-attached camera, was a breeze, and the setup instructions were perfectly clear. Too bad the picture wasn't. Confusing documentation and configuration screens that lacked the options shown in the instructions left us with a picture that looked more like an X-ray. Clear that up, though, and it could be a decent videoconferencing gadget — if you know someone else who has one. *Kevin Fogarty*



FORCE FX
CH Products
www.chproducts.com
About $100
One of a batch of new joysticks that recoil with gunfire, vibrate when you drive over bumpy roads and stiffen up when pulling out of a negative-G dive — now *that's* cool. It's a next step in user interaction with computer programs, whether they're games or touch-sensitive business applications such as training programs. The effects come from two motors packed into the 5-lb. stick and from the I-Force technology in supported games. Some force-feedback effects can be programmed to react in nonsupported games. *Kevin Burden*

COOL STUFF '98



OLYMPUS DIGITAL VOICE RECORDER D1000

Olympus America, Inc.
www.olympus.com
$299

A mini tape recorder — how complex could that be? Try 80 instruction pages, that's how complex. This spiffy minirecorder runs on AA batteries, uses a flash memory card instead of cassettes and has tons of features including voice-activated recording, silence compression, message editing, partial erasing and alarms. You can probably make some pretty good bootleg concert tapes with it, too. *Stewart Deck*

REX PC COMPANION

Franklin Electronic Publishers
www.franklin.com
$149.95

Its ultrasmall size (about 3.5 in. wide) gives the Rex PC Companion a high cool quotient, but its portability doesn't make up for its drawbacks as a personal information manager (PIM). You can't change appointments without plugging Rex in, and it changes appointment times when you change time zones. Think of it as a portable Rolodex, though, and you'll be fine. It can import data from most popular PIM software. Add $30 to the list price for the docking station if you don't want to use it as a PC card. *Kevin Fogarty*



TOUCH SCREEN DATABANK, MODEL VDB200B-1

Casio, Inc.
www.casio.com
About $120

One of two contestants in our Geek Chic watch category, this snazzy little piece of wrist technology features a stopwatch, five alarms, a calendar, a telememo function that stores up to 200 data items in memory, and memory protect mode, which saves your data if the battery runs out. Entering any data into this tiny thing is very difficult. *Laura Hunt*

HARMONY SLEEP COMPANION

The Sharper Image
www.sharperimage.com
$59.95

The Sharper Image says its customers call the Harmony Sleep Companion "the nighttime marriage saver," and that may not be an exaggeration. The watch has sound sensors that pick up repetitive sleep sounds (we're talking about snoring here), and it sends "gentle vibrations" to the wearer until the sleep position is changed (and the snoring stops). (Note to editors: Next year, the only watch I test is a Movado.) *Laura Hunt*

HI-VAL DVD HOME ENTERTAINMENT SYSTEM

Hi-Val, Inc.
$849
$649 without wireless remote

With its PC upgrade kit, Hi-Val DVD promises to take digital video disc (DVD) technology out of the home entertainment center and pop it in to a PC for data purposes. My test results with the Hi-Val player upgrade kit were mixed and unsatisfying. Installation was complicated, involving an expansion card, several patch cords, software and switch boxes. The product's marginal instructions provided little assistance. After two or so hours configuring the system, I ran into roadblocks when I discovered that Hi-Val doesn't yet support my rather common video cards. *Howard Millman*



CD-ROM ENCYCLOPEDIAS

Microsoft Encarta 98 Encyclopedia Deluxe Edition ($54.95; *Encarta.msn.com/EncartaHome.asp*); Grolier, Inc.'s 1998 Multimedia Encyclopedia (standard $29.95, deluxe $39.95; *www.grolier.com*); The Learning Co.'s Compton's Interactive Encyclopedia '98 ($69.95; *www.comptons.com*) and Britannica, Inc.'s Encyclopaedia Britannica CD 98 ($125; *www.britannica.com*)

These encyclopedia CD-ROMs blow away the set of dusty tomes of dry data I grew up using. Through sound, images and interactivity, they make any topic interesting and manage to retain even a child's attention. For adults, it's nice to have a full set of encyclopedias right at your desktop. In some cases, though, there are two discs, and you have to switch between them to use certain features. *Amy Malloy*



AXIS INTERNET EMAIL PHONE
Uniden America Corp.
www.uniden.com
$299

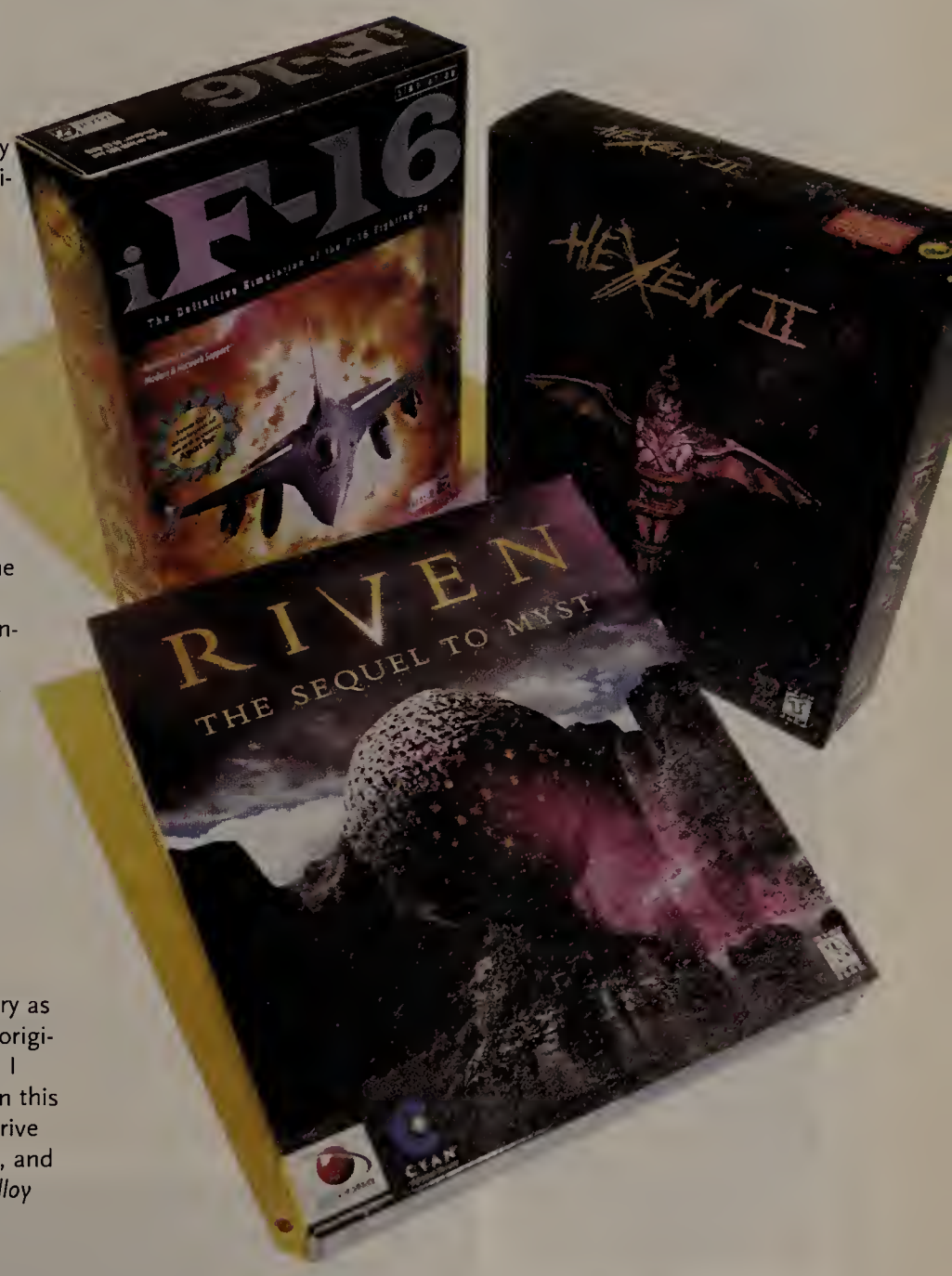
MOBILEACCESS 151
Mitsubishi Wireless Communications, Inc.
Duluth, Ga.
www.mobileaccessphone.com
$500 (estimated)
Plenty of vendors are jumping on the Internet phone access bandwagon. We tried a couple of examples. Uniden offers a cordless phone and base station that triples as an electronic address book and electronic-mail system. It's cool for places where you don't have a PC, such as a vacation home. Its tiny keyboard makes typing more than a sentence or two of E-mail a pain.

Cellular phones with Internet access are great for people who want a mobile device primarily for voice but also must have limited data access: E-mail, stock quotes and the like. MobileAccess offers just that, but keep in mind that it's essentially read-access. Typing E-mail on any phone keypad is horrendous. Also, Cellular Digital Packet Data service for data access can still be spotty outside of downtown areas. *Jim Connolly*

IF-16
Interactive Magic, Inc.
www.imagicgames.com
$49.95
Wearing an Annapolis ring? You almost need that education to fly this sophisticated Fighting Falcon simulator. Luckily, its quick-start mode begins novices in the air loaded with fuel and weapons, locked on to a target and — probably — spinning violently out of control. Fly missions over Korea, Israel and Cyprus. Only an Iraq campaign would have furthered the realism. *Kevin Burden*

RIVEN
Broderbund Software, Inc.
www.redorb.com
$39.99
Like its extremely popular predecessor, Myst, Riven starts you off in a new world without much instruction on what to do or how to do it. You don't need to be a gamer to enjoy this one; you just need the ability to appreciate the detail of its surrealistic world, the smarts to solve its cryptic mysteries and heaps of patience. *Kevin Burden*

HEXEN II
Activision, Inc.
www.activision.com
$45
Run to church as fast as you can after playing this game. The first-person adventure pits the gamer against the Four Riders of the Apocalypse and their dark generals. Built with the state-of-the-art Quake engine, its environments are visually intriguing and offer the same multiplayer capabilities that made Quake so popular. *Kevin Burden*





ZIRCON'S REPEATER 25
Zircon Corp.
www.zircon.com
$30
This tape measure/voice recorder makes a rather simple job — measuring — cumbersome. The tape measure is heavy, and although it's nice to record the measurements rather than write them down, it doesn't truly automate this task. *Amy Malloy*

TETRIS JR. CLONE
(a.k.a. Super mini brick game)
www.interlog.com~tbrown/tetris.html
$20
An editor suggested we review Tetris Jr. But try as we might, we couldn't get our hands on the original, so we settled for a clone. My quick take? I couldn't get the annoying music that plays on this mini video game to mute, which started to drive me crazy. But I must admit that it looks cute, and it makes for an interesting key ring. *Amy Malloy*

CALCULATOR
Brielle Executive Gifts
www.brielle.com
$15
Besides adding, subtracting, dividing and all that stuff, this calculator can be rolled up, but it's a little too large to walk around with it in your pocket. And you have to hold it flat when you unroll it. *Amy Malloy*

In Depth

SAYS WHO?

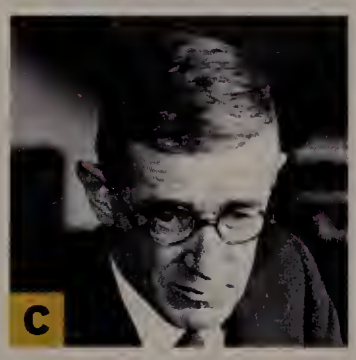
It's nearly Christmas. Relax. Let the future of the information systems organization hang fire for a week.

Take a quote quiz instead. Can you match the words of wisdom or humor to the person who uttered them?

Our source is the *Dictionary of Computer Quotations*, edited by Donald D. Spencer (Camelot Publishing Co., Ormond Beach, Fla.; 1997, paperback, 170 pages, $24.95).


KATHERINE LAMBERT
A


CHARLIE SAMUELS
B


MIT MUSEUM
C



JAMES D. WILSON/GAMMA LIAISON
D


APPLE COMPUTER, INC
E


J. AN LEVENSON
F

THE QUOTES

1. "Those damn digital computers."

2. "Some people fear that technology will become more engaging than live human interactions. That's silly; technology is already way more interesting than other people."

3. "The brain happens to be a neat machine."

4. "The basic idea of what a spreadsheet would be came to me in the spring of 1978. The goal was that it had to be better than the back of an envelope."

5. "The question of whether computers can think is just like the question of whether submarines can swim."

6. "It's tough to sell stuff on the Internet."

7. "Few companies that installed computers to reduce the employment of clerks have realized their expectations. ... They now need more, and more expensive, clerks, even though they call them 'operators' or 'programmers.' "

8. "I am thinking that all these tables might be calculated by machinery."

9. "I stood up in the audience during the question session and said, 'What do you propose to do with the 3 million existing Cobol programmers?' And the answer was, 'Shoot them.' "

10. "You can't interact with the Internet if you can't read and write."

11. "My primary purpose in life has not been in making programs, not in designing languages, not in running computers, but rather in making it easier to use computers."

12. "I'd rather be liked than rich."

THE QUOTED

A. Newt Gingrich

B. Ed Yourdon

C. Vannevar E. Bush

D. Scott Adams

E. Steve Wozniak

F. Peter Drucker

G. Dan Bricklin

H. Charles Babbage

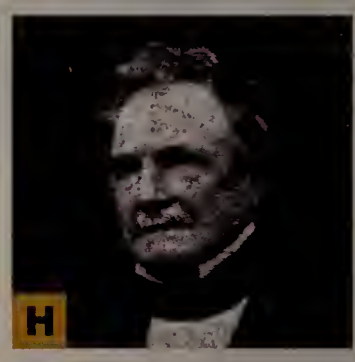
I. Rodney Dangerfield

J. Grace Hopper

K. Edsger Dijkstra

L. Marvin Minsky

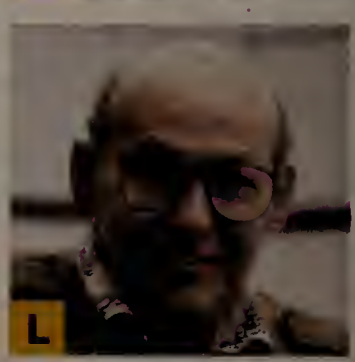

AMANDA JONES
G


THE COMPUTER MUSEUM
H


EVAN AGOSTINI/GAMMA LIAISON
I


J


K


THE COMPUTER MUSEUM
L

ANSWERS: (1) C. - Vannevar E. Bush (1890-1974), who in 1930 built the first general-purpose computer, which he called a "differential analyzer." (2) D. - Scott Adams, creator of "Dilbert," Ratbert, Catbert and everybody's favorite pointy-haired boss. (3) L. - Marvin Lee Minsky, author, MIT professor and artificial intelligence maven. (4) G. - Daniel Bricklin, co-inventor (with Robert Frankston) of VisiCalc, the first electronic spreadsheet, and founder of Trellix Corp. (5) K. - Edsger W. Dijkstra, Netherlands-born computer scientist and one of the discipline's most respected figures. (6) I. - Comedian Rodney Dangerfield. (7) F. - Peter F. Drucker, professor at Claremont (Calif.) Graduate School and one of the chief management authors of this century. (8) H. - Charles Babbage (1792-1871), English mathematician, genius and forefather of the computer. (9) B. - Edward Yourdon, chronicler of the programmer's lot. (10) A. - Newt Gingrich, Speaker of the U.S. House of Representatives. (11) J. - Grace Murray Hopper (1906-1992), early programmer and key figure in the development of Cobol. (12) E. - Stephen Gary Wozniak, co-founder of Apple Computer, Inc. — *Quiz compiled by Steve Ulfelder, senior editor of* Computerworld's *In Depth section. His Internet address is steve_ulfelder@cw.com.*

READ FOR POWER

51 issues for ~~$48~~. Now only $39.95



First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ❑ Home ❑ Business ❑ New ❑ Renew *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/ Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./ Retailer
- 95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Mgmt.
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
- (a) Solaris (e) Mac OS
- (b) NetWare (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTStep

App. Development Products ❑ Yes ❑ No

Networking Products ❑ Yes ❑ No

4. Do you use, evaluate, specify, recommend or approve the purchase of Internet products and/or services?

❑ Yes ❑ No B4M7 Q

READ FOR KNOWLEDGE

51 issues for ~~$48~~. Now only $39.95



First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ❑ Home ❑ Business ❑ New ❑ Renew *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/ Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./ Retailer
- 95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Mgmt.
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
- (a) Solaris (e) Mac OS
- (b) NetWare (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTStep

App. Development Products ❑ Yes ❑ No

Networking Products ❑ Yes ❑ No

4. Do you use, evaluate, specify, recommend or approve the purchase of Internet products and/or services?

❑ Yes ❑ No B4M7 Q

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

THE COMPUTER MUSEUM

IT Skills Management For Today, For Tomorrow

Search thousands of courses, CBT's, books and more offered by these learning providers:

- American Research Group (ARG)
- Boston University Corporate Education Center
- Business Communication Review
- CBT Systems
- The Center for Systems Management
- Classic System Solutions, Inc.
- DCI
- DPEC
- ESI International
- Hewlett-Packard Educational Services
- IDG Books
- IKON
- Interpersonal Technology Group
- Jackson-Reed, Inc.
- Learning Tree International
- Lockheed Martin Advanced Concepts Center
- Network World
- NIIT, Incorporated
- Strategic Management Group, Inc.
- Sybase/Powersoft Education
- TeKnowlogy Education Centers
- Televerde

People are your most valuable asset. Everyone benefits when you have a clear picture of current staff skills and future skill needs so that people can be developed and deployed to the best advantage. CareerAgent is a comprehensive, customizable, intranet career development tool that will help you increase productivity, reduce attrition, and strategically position your staff to meet corporate objectives.

CareerAgent will help you:

- Assess skills
- Manage skill development
- Plan for future staffing needs
- Find training resources

CareerAgent is like having your own staff development consultant 24 hours a day, anywhere in the world. Call today.

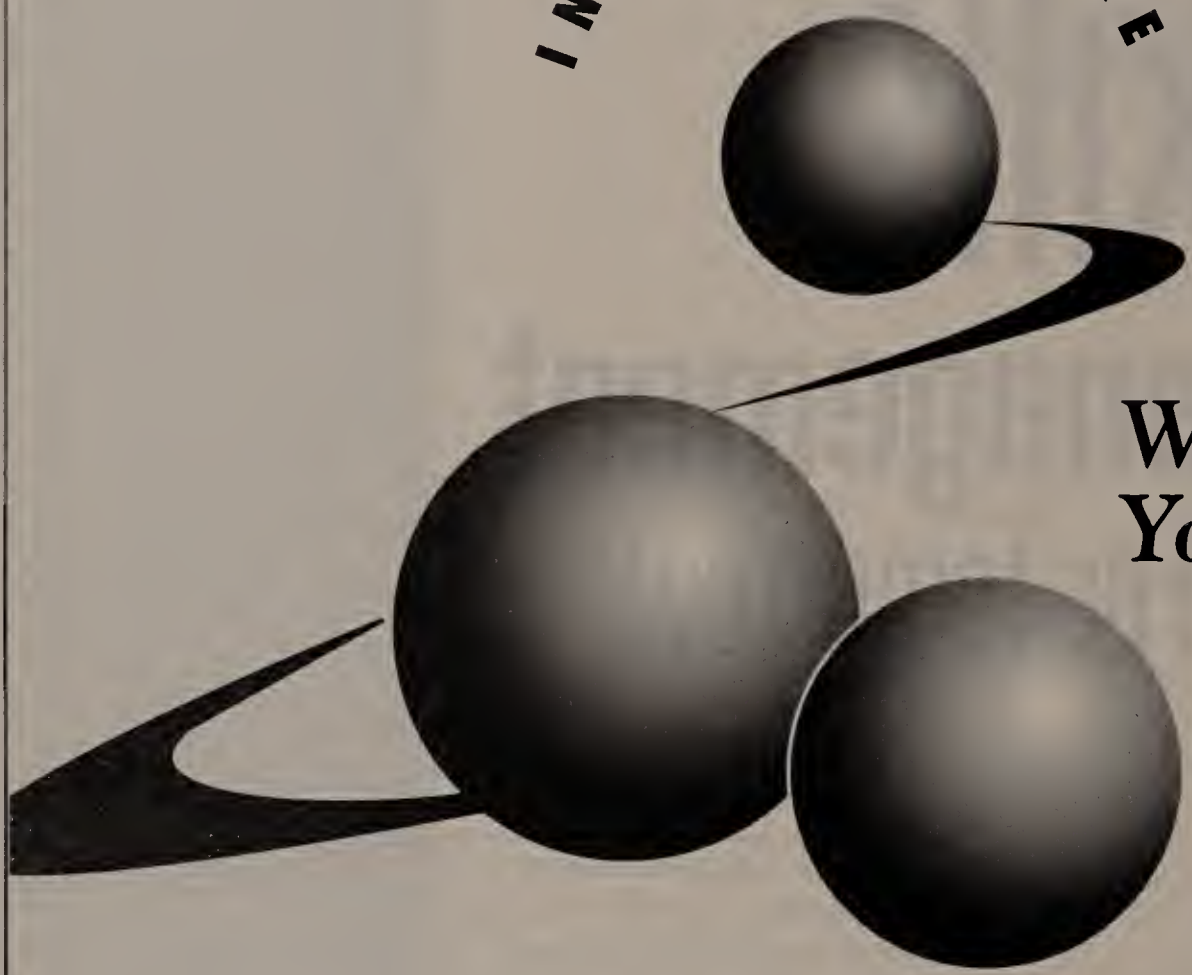
Call 1-888-25Agent, ext. 6000

Take a test drive. Explore the free Internet version of CareerAgent that is available for individual IT leaders at

careeragent.computerworld.com

COMPUTERWORLD
career@gent

EXECUTIVE
TECHNOLOGY
SUMMIT



Web Enabling Your Enterprise

Executive Technology Summit '98
April 26-28, 1998
La Costa Resort and Spa, Carlsbad, CA

Call 1-800-387-9746 to register today!
www.simnet.org

SIM International

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

IT Careers

When you appeal to the child within IS professionals, bringing out their creative juices can become . . .

CHILD'S PLAY

BY KATHLEEN MELYMUKA

If you walked into a conference room last May and found Hewlett-Packard Co. information systems managers playing with Silly Putty, rubber lizards and plastic hand grenades, you might have thought they had some loose welds on their circuit boards. The fact is, they were learning to unlock their creativity.

Creativity trainers say the challenge isn't to teach creativity but to nurture the creativity that's innate in everyone; to send the message that it's OK to color outside the lines. Corporations are getting that message.

"We're always looking for out-of-the-box thinking," says Kris Fletcher, a manager with the corporate information technology group at HP, where pressure to cut costs while providing better technology to internal customers has challenged IS managers to think more creatively.

"The key is just try to get them to go someplace in their mind and come up with something to launch new ideas . . ."
– Rita Hummel, HP

HP's IS managers were in the third day of a worldwide meeting when they found things had changed. Their conference room walls and ceilings were plastered with posters, and tables were covered with toys and puzzles. Plastic fruit dangled from the ceiling. "Just arriving was a shock," Fletcher says. "The order we had the previous day was no longer there."

That, of course, was the idea.

"I was asked to shake them up a little," says session leader Rita Hummel, an HP program manager who had recently moved from the education arena. Hummel focused on some real problems, and the managers began with traditional brainstorming in groups. When they had run out of

Child's play, page 72

STEVE WACKSMAN

CHILD'S PLAY



CONTINUED FROM PAGE 71

ideas, she showed them how to make unusual connections.

They looked at a series of photos or miscellaneous objects (puppets, rocks, rubber lizards, plastic hand grenades) and were given one minute to relate as many words as possible to each. A photo of a field, for example, might start the chain, "yellow, sunny, warm, bright . . ."

"There was time pressure," Fletcher says. "People were jumping up like a game show; that was the atmosphere."

Once people had brainstormed about the photos and objects, they were asked to relate those observations to the real issues. "The key is just try to get them to go someplace in their mind and come up with something and use that to launch new ideas and new associations about the problem at hand," Hummel says.

Remarkably, the groups did much better: Some doubled the number of ideas they'd had using traditional brainstorming.

"People said it was the most productive off-site [training] they ever had," Fletcher recalls. She has taken the techniques home. "I've used this with my own staff," she says. "If you consistently try to be creative, you get more out of people."

Life is suite

TRAINING isn't the only way to get the creative juices flowing. At the Information Services Division of American Greetings Corp. in Cleveland, for example, a recent change in the workspace arrangement boosted creativity.

"We wanted to achieve an environment where associates would be more likely to have serendipitous encounters with each other and fortuitous interruptions," says Tim Persons, senior business consultant.

The thinking was that all IS people have knowledge that's applicable to a variety of problems, so by facilitating interaction you can enable all kinds of knowledge transfer that wouldn't normally happen. "By transforming the physical space, we created the opportunity for that," Persons says.

The division, which had been set up with individual rows of cubicles, was reconfigured into "team suites," with a public social area in the center and cubicles around it.

"With a slight swivel of the chair, anyone can have eye contact with three or four other people," Persons says. "Individuals have to seek it out, but we removed the barriers and sent a subtle message that we want people to engage in conversation."

Reaction was mixed. "Some people love it, and some people hate it," Persons reports. But the results have been positive.

"There can be no doubt it nurtured creativity," says David Smalley, a work group leader whose team has been in the suites for a year. "Almost immediately after we settled in, several changes were conceived in our systems that greatly improved the speed with which we were able to handle errors. I know without question that those ideas were born by people getting together over a cup of coffee and setting out ideas right there."

The hidden answers

FORD MOTOR CO. has taken a creative approach to process improvement methodology with a program called Ford RAPID. At the one- or two-day workshops, cross-functional teams meet to look at a process, identify the problems and recommend solutions.

The planning team first gets buy-in from a sponsor — the manager responsible for the process and the one who can approve the changes recommended by the team.

The teams comprise employees who are not only familiar with but also affected by the process under analysis. The sponsor opens the session by empowering the team to recommend solutions.

Knowing the solution is in their hands gets the team's creative juices flowing. "The group is guided to discuss solutions within the sponsor's realm of approval," says Bruce Jones, a client/server architect at Ford who has participated in Ford RAPID workshops.

"This way the group stays on task. Nearly always, the group's recommendations are approved. It's a sort of guarantee to get it done," Jones says.

A strict deadline keeps the team from getting bogged down in minutiae. "They give you just enough time or a little less than you would really like," Jones says. "The deadline gets people to focus, and it tempers discussion."

"We're looking for quick hitters: easy, inexpensive solutions with big payoffs," says Roy Seifried, planning and development manager for Ford RAPID.

Getting people from all parts of the process together allows them to see the forest rather than just their individual trees.

"You have all the right people in the room, so they can see how the big picture works and how they all affect one another and how they can reduce barriers," Jones says. As a result, some fixes are as easy as picking up a telephone.

"In one workshop, we had a group that included multiple divisions and multiple suppliers, and we realized that nobody had a complete phone list of all the people involved in the process," Jones says. "The solution was as simple as creating this process-oriented phone list. Most RAPIDs approve four [or] five solutions. Some solutions are complex, but others are just that simple."

Ford RAPID facilitators undergo a week of training during which they learn to nurture creativity among team members.

"A good facilitator will make team members feel comfortable enough that they can think outside box," Seifried says. "If someone comes up with an off-the-wall idea, it won't be stifled. The facilitator makes certain that the environment is such that team members feel very free to blue-sky; where we are listening and are receptive to their ideas."

"We have a few RAPID rules," Jones says. "One is, 'Every idea is a good idea.' "

Measuring the effectiveness of creativity strategies is difficult because so much of the evidence is anecdotal, but you can easily get a good feel for whether it's working, says Stanley S. Gryskiewicz, author of Positive Turbulence (Jossey Bass, San Francisco; 1997) and a senior fellow at the Center for Creative Leadership in Greensboro, N.C. "Look at the receptivity to creative ideas," he says. "Do people feel more freedom? Choice? Are they more challenged by work? Do they feel like participating in setting goals? Do they have a boss that encourages them?"

If the answers are yes, you're on track. Or should we say, off track? □

Melymuka is Computerworld*'s senior editor, management.*

So, just what is "creativity"?

The nonprofit Center for Creative Leadership in Greensboro, N.C., which trained 30,000 managers last year, defines creativity much more broadly than most laypeople probably would.

"We look at the number of ideas you could generate, how divergent your thinking is, the ability to make remote associations, tolerance of ambiguity, how much information you can take on before you have to close and also style," says senior fellow Stanley S. Gryskiewicz. "All people are creative, but they differ in the horizontal dimension of style.

"Style relates to how people define problems," he explains. "Some people accept a problem definition and come up with creative ideas for improving the situation. The opposite style is to redefine the problem. They also produce creative ideas, but they're different.

"So short-term creativity is about how we can do things better; long-term is about how we can do things differently. The big trend is raising individuals' awareness of their own styles and helping them understand when their style is most appropriate and when it's not," Gryskiewicz says.

"For example, when you're in a product development cycle and it's six weeks to launch, you want to improve what you have. If it's two years to launch, you want to open up possibilities to do things differently."

— Kathleen Melymuka

Softwsre Engineer (Unix Networking/Sys. Admin. & Sys. Prog.): Instsll, customize & fine tune performance of operating sys. on heterogeneous pistforms. Achieve connectivity of workstations using networking technologies. Perform sys. configuration mgmt. for both h'dwsre & s'twsre. Provide user support & network trouble-shooting services. Carry out performsnce tuning of spplication packages such es Relationel Dstabase Mgmt Systems (RDBMS) under Unix opersting system. Msnage TCP/IP based services such ss NFS, NIS, TFP, TELNET, etc. Perform network mgmt. using SNMP & relsted tools. Ensure fsult tolerant printer services & back-up mgmt. procedures. Utilizing knowl. of installation of WAN connectivity w/heterogeneous h'dwere platforms using routers &/or gateways over leased & dedicated circuits. Using knowl. of Internels on opereting sys. for patching & coding device drivers & network progrm'g using IP/IPX, TLI, Streams & SOCKETS. Req: B.S. scI./comp. scI./engr'g/math (or equlv.) & 1 yr exp in job offered or ss progremmer/systems snslyst. Must hsve eppropriste combinstion of skills ss follows: 1 of A & 2 of B or 1 of D; or 1 of A & 2 of B & 2 of C; or 1 of A & 2 of C & 2 of D es follows: A) Operating Sys.: IBM AIX, HP-UX, Sun Solsris, DEC Open VMS/Ultrix, SCO Unix/ODT, USL Unix SVR4, UnixWere; B) LAN/WAN Connectivity/Networking Protocols: TCP/IP, IPX/SPX, NFS, Bridges, Routers, Geteweye, X.25, X.400, ISDN, ATM; C) System/Network Prgrm'g: Perl, Korn, Shell, C Shell, RCP, TLI, Streams, SOCKETS, API & toolkits, DDK, AWK, SED, LEX, YACC; D) Networking techs: Ethernet, Token Ring, FDDI; high mobility preferred (multiple positions). 40 hrs/wk, $49,000-$60,000/yr. Report/submit resume to PA Job Ctr st: Greg Schwing, Mgr, Office of Employment Security, 2100 Wherton St., Beaver Fslle, PA 15010. JO #9076942.

MIS DATABASE ADMINISTRATOR: Design and maintain the data schema of company databases built on Oracle. Implement backup and data recovery procedures. Test, tune and maintain database security. Monitor database application performance against established guidelines. Plan and perform the archiving of company records. Initiate and document program modifications to the data tables. Handle requests for data queries and reports. Requires a Bachelor's degree in Computer Science or Computer Engineering and two years experience in job offered or two years directly related experience in design, installation and management of relational databases in a multi-platform environment. Background must include at least two years experience in Oracle 7 and Oracle Security. 40 hour work week. $48,000 per year. Apply at the Texas Workforce Commission, Dallas, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, Job Order #TX0240663. Ad Paid by an Equal Opportunity Employer.

Software Development Engineer. 40 hrs/wk, 9am-5pm. $50,000/yr. Design, develop, implement & test software lor telecommunications networks. Forward error correction (FEC) using BCH & Golay. Implementation & design of industry standard communications software & real-time multitasking. Object-oriented design. Tools: C/C++; UNIX; Purify; SCCS; Sun OS; X-Windows; CASE; Sybase; X.25; TCP/IP; Rogue Wave Class Library; packet protocols. M.S. in Computer Science as well as 6 mos. in job offered or as an Engineer required. Previous exp. must include: communications software design; real-time multitasking; packet protocols; C; C++; UNIX; FEC. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, IL 60605, Attention: Mary Millea, Reference #V-IL-16560-M. No CALLS. An Employer Paid Ad.



THERE'S NEVER BEEN A BETTER TIME.

THERE WILL NEVER BE A BETTER PLACE.

It's been a good year. Yet as the clock counts down to the New Year, you may be wondering whether you could do better in 1998. It's all a matter of where you are. And if you're at Price Waterhouse, the excitement is just beginning. Explosive growth built on a solid global client base has created **excellent opportunities nationwide** for professionals who want to take part in the kind of high-profile, high-impact projects that PW is best known for.

Why join the PW Global Data Warehouse Practice?

- **Focused Global Strategy and Supporting Infrastructure**
- **Global Data Warehouse Knowledge Center**
- **Data Warehouse Specific Implementation Methodology**
- **Largest Global Pool of Trained and Experienced Data Warehouse and Data Mining Consultants**

Currently, we seek Project Managers, Data Modelers and Data Architects with experience in any of the following areas:

- **Full life cycle development in support of a data warehouse**
- **Dimensional modeling approaches**
- **Very large database systems**
- **Extraction, transformation and OLAP tools**

Candidates must be willing to travel.

For consideration, please send your resume, indicating location preference, to: **Price Waterhouse Management Consulting, Dept. CW1222, Fax: 1-800-493-7828 or e-mail: PW_JOBS@notes.pw.com (no file attachments, please).** For additional information, visit our web site at **http://www.pw.com/mcs** We are proud to be an equal opportunity employer.

one of the COMPUTERWORLD Best Places to Work 97

Price Waterhouse
Mind & Muscle℠

© 1997 Price Waterhouse LLP

Softwsre Engineer - PC Networking/Sys. Admin. & Appl. Integration: Utilizing knowl. of networking topologies, networking technologies & PC architecture Instsll, configure & msnage phyelcally dietributed computer networks & network operating syeteme. Provide user support, network troubleshooting, network expsnsion, printer services & back-up mgmt. Coordinate local & remote hardwsre & softwsre configuration; implement & execute operstions procedures & monitor syetem resource utilization; perform capacity plenning. Interfsce mein epplicetion environ. w/underlying networking software. Carry out performsnce tuning of network for user spplicatione. Req: B.S. in scI./ comp. scI. /engr'g/ meth or equlv. 1 yr exp in job offered or ss progrsmmer enslyst/systems snslyst. Must heve sppropriate combinetion of skills ss followe: 2 of A & 2 of B & 1 of D; or 2 of A & 2 of B & 1 of C & 1 of D. A includes Operstlng Systems: Novell Netwere, Windows NT, OS/2, Windows 95, LAN Server, Benyen Vinee, LANmensger, LANtastic.; B includes networking: IPX/SPX, TCP/IP, FTP, Windows for Workgroups, NetBIOS, X.25; C includes network mgmt: SNMP, LANsnslyser, NetView, NetMsnager; D includes LAN technologies: Ethernet, Token Rlng, FDDI. High mobility preferred. (Multiple positions) 40 hrs/wk; $49,000 - $60,000/yr. Report/Submit resume to PA Job Ctr st James Msckln, Office of Employment Sec., 1122 Western Ave., Pittsburgh, PA 15203. JO #8030870.

Accept the IS Challenge!

Standard Insurance Company is expanding its Information Systems Division in downtown **Portland, Oregon** to meet the ever-changing needs and expectations of our customers. We are seeking professionals with business application experience in at least two of the following environments: (1) VSAM/COBOL; (2) UNIX/Oracle; or (3) PowerBuilder. Our network environment includes NT Servers, Windows 95 and TCP/IP. We have the following opportunities available:

SR. DATA ANALYST: Strong Oracle, preferably in a UNIX environment, data analysis and modeling, data warehousing concepts and technology, application development and knowledge of the complete project life cycle.

SR. DATA ARCHITECT: Solid data architect background. Experience with data warehousing concepts and technology. Experience with Oracle in a UNIX environment is required.

For complete information on any of the above positions, please access Standard Insurance on the Online Career Center on the Internet at **www.occ.com/sico** Or, you may contact the Technical Recruiter at **(503) 321-7314.**

Resumes may be sent to **B. Lyman, Standard Insurance Company, 1100 SW Sixth Avenue, L-2 Human Resources, Portland, OR 97204, fax to (503) 321-7757 or e-mail to: blyman@standard.com** Equal Opportunity Employer.

STANDARD INSURANCE COMPANY
People. Not just policies.®



SR. LEVEL DATA MODELING/ WAREHOUSING CONSULTANTS

Logic Works, a leading developer of database application modeling tools, currently has opportunities available for Sr. Level Data Modeling/Warehousing Consultants available throughout the United States.

Responsibilities include performing consulting and educational activities with Logic Works products, helping develop functional specifications as well as logical and physical database design and providing technical guidance to clients.

Bachelor's degree in Computer Science or computer related field along with 5+ years of relevant experience and data modeling and data warehousing experience required. Working knowledge of Logic Works products (ERwin, BPwin, ModelMart, Universal Directory, TESTBytes, etc.) is desirable. Extensive travel is a prerequisite.

Logic Works offers an outstanding compensation and benefits package. For confidential consideration, please email/fax/send your resume and salary requirements to: **Logic Works, Inc., 111 Campus Drive, Princeton, NJ 08540; email msweeny@logicworks.com or Fax (609)514-2906, Attn: Mike Sweeny.** No phone calls please! Equal Opportunity Employer.

VISIT OUR WEB SITE AT http://www.logicworks.com For other career opportunities

logic works®

The Darlings of DATA

Big challenges, and bigger salaries, are going to data modeling and data warehousing professionals. And no wonder, considering their training



LYNN TANAKA

BY KERRY LEE

When Doug Murphy first became interested in his company's data mart project employing Oracle Corp. development tools, the biggest attraction for him was the sheer challenge.

"This was a project that had laid around at Keyport for over a year. The hardware, in fact, had been purchased nine months prior to [my] getting involved with it," says Murphy, a project leader at Keyport Life Insurance Co. in Boston. "There were some false starts with this project. So, call it foolishness or call it a challenge, I looked forward to taking the mantle and making it work."

Murphy's attitude reflects that of many information systems professionals who are jumping into data modeling and data warehousing and not looking back.

Salaries for data modeling and data warehousing professionals range from $60,000 to $100,000 per year or more, depending on the level of experience of the individual.

Programmers, programmer/analysts, database administrators, systems analysts, business analysts and many other IS professionals are being drawn to data modeling and data warehousing projects as a natural next step as they hone their technical skills.

"Any kind of company that can use some kind of math tool for data manipulation can benefit from it," says Ken Taylor, a business analyst at The Berkshire Group, a real-estate financial services company in Boston.

Taylor says he, too, was attracted to the challenge and newness of data modeling work. "You're always in project meetings, and you're doing something new and challenging. You're starting from scratch, where you get to do a lot of re-engineering, process flow design and that sort of thing."

Such challenges are also met with big rewards, or, as Cliff Calderwood, vice president of business information services at Keyport, puts it, "big dollars." Calderwood says data modeling professionals tend to be near the top of the IS ladder and are highly sought after. "Certainly for a heavyweight designer, I could foresee scenarios where [he] would get regular calls from people," Calderwood says. "I've heard $2,000 a day quoted" on the contracting side, he says.

Before jumping on the data modeling bandwagon, IS professionals need to know that not only are data modelers and data warehousers highly sought after, but they are also highly trained individuals.

The training for data modelers and data warehousers can range from formal, 20-day courses by a third-party provider to informal, hands-on training looking over the shoulder of a consultant hired to jump-start a company's data modeling project.

"There is topic-specific training. By that I mean warehouse concepts, star-design techniques," Murphy says. "Then we went into the specific tools training, the application tool, in this case Oracle's Developer/2000, and we also purchased Oracle's CBT [computer-based training] series.

"It's a series of 10 CBTs covering concepts from Oracle design, database design, through to C shell scripting," he says.

From an administrative point of view, Calderwood says IS pros can take an Oracle data administration course for one to two weeks. But then, "you get the bulk of your training on the job when you come back. You either learn from your peers or you learn by fire by actually getting involved in it."

"We had the [database administrator] that we hired do a beginners' preliminary class on Oracle databases," says Kurt Emmenetter, manager of business solutions at Coca-Cola Enterprises, Inc. "Anything more advanced, we outsourced and would go to, for instance, Oracle," he says.

Sending employees to a third party for base training can cost anywhere from $5,000 to $15,000 per employee.

Hiring experts say valuable data modelers should have experience with database design and analysis, relational databases, programming and database administration, as well as business experience and the ability to combine data sources.

Even data modelers need to spend time mastering "soft skills." Those include knowing the company's business and company culture, applying technical skills to the company's project, communicating well with various personalities, being able to work in a "team environment" and being willing to continually learn new skills.

One important attribute data modelers and data warehousers can have is "knowing the business." IS managers agree that understanding the value of different pieces of data to a company's business and combining that knowledge with technical skills are valuable abilities.

"Understand the business. Have a broad financial background. Don't hop around that much. Hopping around, you're not going to learn the business," says John Georgevits, vice president of MIS at The Berkshire Group. "You may get that next promotion, but what you're going to wind up with is a job that you're not really qualified for." □

Lee is a freelance writer in Austin, Texas.

Resources

For information on data modeling and data warehousing training, visit the following World Wide Web sites:

Barnett Data Systems
www.barnettdata.com

The Knowledge Exchange Co.
www.tkec.com

Computer Channel
www.compchannel.com

Instruction Set, Inc.
www.InstructionSet.com

Learning Tree International
www.learningtree.com

Northeast Training Group, Inc.
www.gis.net/~ntgi

Platinum Technology, Inc.
www.platinum.com/educ/index.htm

Model citizens

Valuable skills for data modelers and data warehousers may include the following:

TECHNICAL:

- Database administration or related experience
- Database design and analysis experience
- Experience with relational databases
- Programming experience
- Business experience (accounting, MBA, finance experience)

NONTECHNICAL:

- Know the business
- Understand company culture
- Be able to apply technical skills to your company's project
- Be able to work in a "team environment"
- "Staying power" — don't hop from company to company
- Willingness to continually learn new skills

Software Engineer Duties: 3D.CAD tools development; Windows NT Networking Administration; Disaster Recovery/Backup System Support; SQL Server Administration; etc.; configuration management: Source Code and Version Control; Build Process Administration; Defect Tracking; Product Mastering. Requirement: MSCS; Prof. in C++ programming. $44K, plus. Hrs: 40hrs/wk, 9am-5pm. Mail resume to 3D/EYE, Inc. Human Resources Department at 700 Galleria Pkwy, Atlanta, Georgia 30339 USA, Fax 770-937-0700, or E-Mail to Jobs@eye.com

Sr. Software Engineer. Delray Beach, FL. Install, support Oracle Mfg. and Financial Modules. Responsible for design standards, life cycle methodologies, configuration mngmt, code reviews. M.A. Com. Sci. or related discipline. 1yr exp. SW Eng or 3yrs Prog/Anal. 2yrs exp. Oracle Mfg and Financial, Forms, Reports, Pro C. $75,000/yr. 40 hrs./wk. Send resume to FDLES Bureau Operations, 1320 Executive Center Dr., Ste 110, Tallahassee, FL 32399-0667. Job Order # FL-1712302.

SR. PROGRAMMER ANALYST

Analyze computer programs and related procedures, prepare charts and diagrams to assist in problem analysis, encode, debug, test, document, provide code analysis, and install operating programs and procedures. Utilize TCP/IP, C, C++, Visual C++, WIndows NT/95, MFC, WINSOCK, Install/Shields, HTML, JAVA, Internet Protocol for wireless networking, ARTour, and Telnet 3270 and 5250 wireless data reduction algorythm. BS in Math, Engineering or Comptuer Science. 2 yrs exp in job or 2 years experience as Programmer/Analyst, graduate assistant, and/or assistant systems analyst w/exp with TCP/IP, Windows NT/95, MFC, JAVA, HTML, WINSOCK, Install/Shields, device driver and network programming, UNIX Kernel, SUN OS, C, C++, & Visual C++. 40 hours/wk. $54,000/year. Apply to nearest Job Service office or submit a resume to: Job Service, 742-F East Chatham St, Cary, NC 27511. All resumes **MUST** include the applicants social security number.
Job Order # NC5770408
& DOT Code 030.162-014

DATA WAREHOUSING OPPORTUNITIES

Innovative Systems, Inc. headquartered in Pittsburgh, PA, is the world-leader in delivering client information software products and consulting services to organizations whose success depends on a complete and accurate understanding of their clients.

Due to our burgeoning presence in the data warehousing industry we are in immediate need of individuals experienced in the design, development and implementation of large-scale databases and data warehouses. If you are looking for a challenging opportunity in an aggressive, growth oriented technology firm, please send your resume to:

ISI
790 Holiday Drive
Pittsburgh, PA 15220
ATTN: HR
e-mail: HR@innovgrp. com
Visit us on the Internet at http://www.innovgrp.com/

ISI is an Equal Opportunity Employer - M/F/D/V

Engineering and Scientific Computer Programmer. Rate of pay: $41.00 per hour on a full-time basis. Minimum job qualifications are Bachelor Degree in Computer Science and at least three years of experience. Must be familiar with COBOL Support. Candidate must be able to code and maintain business application programs from customer instructions and formulate logical statements of business problems. Must also be able to create and modify computer programs, devise procedures and design programs for solutions, JCL Streams, and documentation for production applications. Must be able to perform testing necessary to complete the program development cycle. Send 2 copies of resume to: Job Order #98-001, Post Office Box 989, Concord, NH 03302-0989.

Software Engineer - Design/implement enhancements in support of SITAMail Gateway IBM-HMP software; provide support/documentation on design/external/internal/test specifications, feasibility/interoperability analyses, API User Guides, support manuals & release notes; interface with 3rd party vendors; & provide X.400 expertise to engineering utilizing experience in developing messaging software under UNIX, including requirements identification, unit testing, integration & documentation; ISS M400; C language; OSI conformance tester; MTA interoperability testing, ASN encoding/decoding; X.400; & mail format gateways. RQMTS: MS in Computer Science & 2 yrs exp in job offered or as Programmer Analyst w/above exp. 40 hrs/wk; 9-5; $60,364/yr. Job in Atlanta, GA. Report or send 2 resumes to: GA Dept of Labor, JO# GA6174645, 465 Big Shanty Rd, Marietta, GA 30066- 3303, or the nearest DOL Field Service Office.

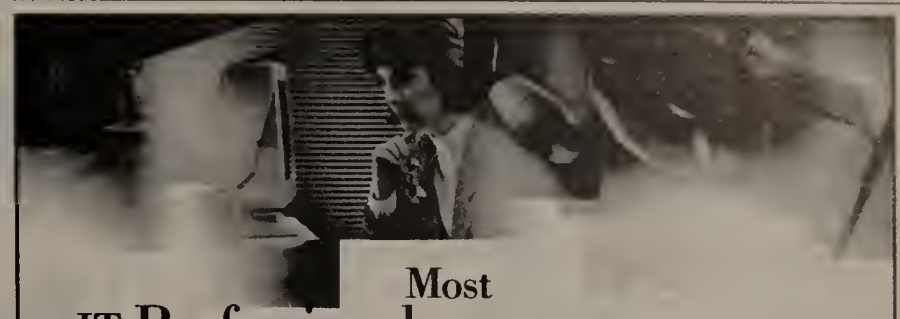
COMPUTERWORLD c@reers

computerworldcareers.com

Chief Computer Programmer. Plan, schedule and direct prep. of programs to process data & solve problems by use of computers; consult with managerial & sys. analysis personnel to clarify program intent; identify problems, suggest changes and determine extent of programming and coding required; analyze, design & develop object-oriented applic's. on UNIX using C++ & Oracle. Must be able to relocate within the U.S. on a project-by-project basis. Required computer applications: UNIX, C/C++, Oracle, lex, yacc, GUI (Graphical User Interface). IBM Mainframe and RPC. Must have Master's or foreign degree equivalent in Computer Science or related and 2 years in job offered or 2 years in Programming, Analyst Program., Software Engineer or related. Hrs: 9a-5p, M-F, $58,400 per yr. Apply to Georgia Dept. of Labor, Job Order #GA6178429, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office.

COMPUTERWORLD career@gent

careeragent.computerworld.com



Most IT Professionals want Cutting-Edge Technologies, Good Pay, and an Exciting Work Environment. Why Stop There?

Why not demand a corporate culture that settles for nothing less than world-class? A company dependent on creative, out-of-the-box IT professionals for its success? One where open, innovative, energetic and proud are descriptors used daily to describe our IT function.

See how Zurich, one of the top eight financial protection and asset management companies in the world, views its IT professionals. Better yet, see how we pay them. You'll earn a competitive salary without having to climb a political ladder to get it. And work on well-funded projects using cutting-edge technologies.

Data Warehouse Project Leader

Responsible for business case development, planning, design and implementation of corporate-wide data warehouse initiatives. Primary source for data will be DB2, utilizing PRISM tools. Requires strong business acumen and the ability to service a diverse customer base. Successful candidate will be well versed in data warehouse philosophy, implementation approaches, products and deployment, and possess the ability to lead the development and implementation of a corporate-wide data model. Property and Casualty Insurance knowledge preferred. **Job Code #97-159**

Data Warehouse Engineer

Responsible for providing expert application and technical support in the design, analysis, coding, testing and problem resolution for business application systems of all levels of complexity. Must be able to work independently and act as a technical liaison in a client environment to provide feedback on technical aspects and feasibility of business. Requires a BA degree in Computer Science or equivalent work experience, strong analytical skills and project experience, excellent written and oral communication skills, and a strong ability to work independently and demonstrate a high level of initiative. Prism and DB2 experience strongly preferred. SYBASE and Business Objects experience a plus. **Job Code #97-227**

These Positions Are Eligible For A $3,000-$5,000 Sign-On Bonus.

Become part of our phenomenal success and leave your mark on one of the most sophisticated operating systems in our industry. But first, leave your resume with us. And start demanding more from your career. Fax or write to: **Zurich Technology Solutions, Attn: Human Resources, Room 463, 3910 Keswick Rd., Baltimore, MD 21211; FAX: (410) 338-9222.** EOE M/F/D/V.

ZURICH



Can Your Lifestyle Stand More Cash?

Start the New Year with a career change to the exciting world of DATA WAREHOUSING with the Highmark Corporation. We have immediate opportunities in the Information Services Division in both our Pittsburgh and Camp Hill, PA campuses for the following:

APPLICATION DEVELOPERS
DECISION SUPPORT/BUSINESS ANALYSTS

Qualified candidates will have a minimum of 3-5 years experience in two or more of the following:

DB2, Teradata, Full-lifecycle development, COBOL, SAS, Development of metadata, IMS, DSS Systems, Healthcare knoweldge is a plus.

We offer a competitive and comprehensive total compensation package. If you qualifications meet our requirements, please send a resume detailing employment history, educational background and salary requirements to: Highmark Blue Cross Blue Shield, Job# H810-509, Fifth Avenue Place, 120 Fifth Ave., Suite 414, Pittsburgh, PA 15222-3099. Fax: (412)544-8368. EOE M/F/D/V.

Senior Data Warehouse Engineer

$2500 Sign On Bonus
With successful completion of 1 year

Adventist HealthCare, an integrated health system of acute care, home care, and long-term care facilities in the Metropolitan DC area, has Immediate needs for a Senior Data Warehouse Engineer, located in Rockville, MD.

- B.S. Degree
- MS-SQL (recent knowledge in 6.5)
- MS Access Programming experience 1-3 years
- Desirables: VB knowledge, TCP/IP, NT and ODBC, Data Warehousing/Mining experience
- Crystal Reports knowledge
- SQL Server Replication
- DBA in areas related to MS-SQL (such as Oracle) will also be considered

ADVENTIST HEALTHCARE

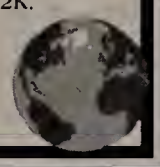
For consideration please submit application/resume: AH Employment Center-Code CPJ, 1801 Research Blvd., Suite 301, Rockville, MD 20850 or fax (301) 315-3110. E-mail: Cjones@adventisthealthcare.com in WP or MS Word format.

OT COMPUTER SYSTEMS

"The Systems and Database Masters"

Providing top notch people and consulting for your projects: Data Modeling;Systems/ Database Architects; Client/Server; RDBMS design and implementation; SQL Server Experts - DBA, development, Installation and Optimization; Project Management; Reengineering; Integration; Migrations; Conversions; Data Warehouse, Y2K.

How Can We Help You?
To Find Out :
Call: 1(800)687-3696.
E-mail: otsystems@usa.net



SOFTWARE ENGINEER to provide specialized consultancy at customers sites to design and develop software modules for functional testing of a Bus Master ASIC for PCI systems; Design and develop a software exerciser for the ARTIC960 communications adapter to verify PCI compliance and diagnose timing problems in the Bus Master ASIC using Logic Analyzers and Protocol Analyzers; Design and develop cross platforms applications using MS C and Intel ic960 C, iB0x86 and iB0960 Assembler programming languages; Develop GUI based debugging tools using OS/2 Presentation Manager and Visual Basic. Require: B.S. degree in Electrical/Electronics Engineering and five years of experience in the job offered. Salary: $50,000 per year, 8 am to 5 pm, M-F. Send resume to: FDLES Bureau of Operations, 1320 Executive Center Drive, Suite 110, Tallahassee FL 32399-0667; Re: Job Order Number FL- 1711180.

SENIOR PROJECT MANAGER: Responsible for overall delivery of application development projects including entire life cycle of project from defining strategy to developing prototype, design, development, and maintenance of custom software applications. Define technical architecture, develop project plans and ensure that implementation is consistent with specifications and the client's requirements. Responsible for interacting with business analysts and end-users and for leading technical project teams. Requires: BS in Computer Science, Engineering or related field. 6 years experience in design and development of applications with at least one year experience in leading teams in development of accounting or financial applications. Demonstrated knowledge of structured methodologies, client/server development environment, RDBMS, SQL programming and local area network. Knowledge of EIS (Executive Information Systems). 40 hrs/wk (9 to 5); $57,850/yr. Send two resumes/ respond to Case #71469, P.O. Box 8968, Boston, MA.

Programmer Analyst - Develop & enhance various internal systems; create detailed & system design documents; & use COBOL, DB2 and VSAM; Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering or Mathematics & 2 yrs. exp. in the job offered. $55,000/yr, 40 hrs/wk, 8a-5p, M-F. Send resume to FDLES Bureau of Operations, 13220 Executive Center Dr., Ste, 110, Tallahassee, FL 32399-0667. Re: Job order number FL-1704432.

BAY SEARCH GROUP

National I/S Placement Specialists

VISIT OUR WEB PAGE
www.baysearch.com

Looking for:
Oracle, SYBASE, UNIX, Visual Basic, PowerBuilder, Web Developers

1-800-637-5499
Fax: 1-888-737-3883

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support various application software packages and projects for Financial, Manufacturing and Distribution industry clients using object oriented techniques, Oracle, SQL*Plus, UNIX shell scripts (Korn and C), PL/SQL, Pro*C, Sybase and Informix within a UNIX environment; Perform data modeling and design. Require: M.S. in Computer Science and two years experience in the job offered. Salary: $60,000 per year, 8 am to 5 pm, M-F. Send resume (in duplicate) to: Case # 71489, P.O. Box 8968, Boston MA 02114.

Database Administrator needed by NJ IT Co for Herndon, VA client site. Must have 2 yr exp dsgng/ implmntg ORACLE database on HP 9000 & SUN Solaris Platforms; installing ORACLE server on Win NT, HP 9000, SUN Solaris 2.3 & 2.5; maintaining security in databases. Bach-Comp Sci or Elec Engg. Respond to: Global Consultants, 601 Jefferson Rd, Parsippany, NJ 07054.

We'll Have Internet Professionals In-Line To Keep You On-Line.

Finding the right Internet professionals can be difficult. That's why more and more companies turn to Shomex Job Fairs. We have 14 years experience helping employers find the best technical professionals. At the Internet Career Expo, you can meet face-to-face with: **Content Developers, Graphic Artists, Electronic Media Designers, Solution Integrators, Internet Consultants, JAVA/HTML Programmers, Networking and LAN Managers, G.U.I. Designers, Security Specialists, Systems Administrators and Webmasters.**



INTERNET Career Expos
Nothing But Net

TUESDAY, MARCH 3, 1998

SAN JOSE MCENERY CONVENTION CENTER
408 S. Almaden Blvd. • San Jose, CA 95110
Exhibit Hours: 11:00am - 1:00pm & 3:00pm - 7:00pm

COMPUTERWORLD c@reers
Our Tech Journal Partner

Call today 1-800-562-7469

to reserve your booth space for the largest live, in-person Internet job fair in the country!

Event Management by SHOMEX

Across The Board, Across The Nation
We've Got The Recruiting Solutions To Meet Your Needs

2601 Ocean Park Boulevard, Suite 200, Santa Monica, CA 90405 • (310) 450-8831 • Fax: (310) 396-3157 • www.internetcareerexpo.com

Career
Upgrade
www.experienceondemand.com

Get your FREE Salary Survey and Career Planning Guide.

It's the most powerful tool you can use to maximize your potential. Knowing where you stand is critical whether searching for a job or preparing for a review. Find up-to-date statistics on salaries in your area and essential advice on assessing your career.



It's time you know.

1-888-ON-DEMAND
To discuss your career options directly with a Source professional.

Or get your FREE Salary Survey by visiting our web site.
www.experienceondemand.com

SourceServices℠
EXPERIENCE ON DEMAND℠
INFORMATION TECHNOLOGY, ACCOUNTING & FINANCE AND ENGINEERING

At DST,
Data Is Our Business.

DST Systems, Inc., located in Kansas City, Mo., provides information processing services for the nation's financial industries.

DST has an immediate opportunity for an experienced DATA ANALYST. This individual will be responsible for analyzing business data requirements, performing logical and physical data modeling and normalization; create, maintain and document data structure definitions.

Requirements include: 2+ years experience in DATA MODELING, including entity/relationship diagramming. Strong data analysis/data administration experience, experience with structured development techniques, use of CASE tools (KEY, Bachman).

Qualified candidates should reply to:

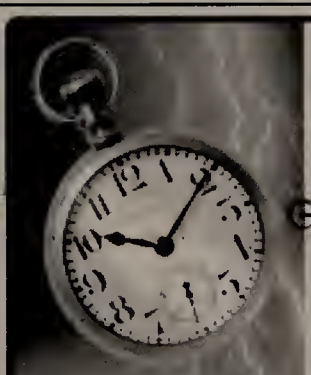
DST Systems, Inc.
Attn: KG
333 W. 11th Street, 3rd Floor
Kansas City, MO 64105
or fax resume to (816) 435-8618

DST℠ DST SYSTEMS INC.

WEB SITE DEVELOPMENT ENGINEER
Design and develop electronic commerce services for Internet based business model using relational database design and object-oriented design technique. Knowledge of C++ programming language, MS SQL server, Tame, Perl and DB-library for C++ in Windows NT environment. Must have a Bachelor's or equivalent and 3 years exp. or a Master's degree and one year exp. Three years exp. as either a Web Site Development Engineer, Software Engineer or PC Database Programmer required. 40 hour work week at $45,650 per year. Submit resume to: FDLES Bureau of Operations, 1320 Executive Center Drive, Suite 110, Tallahassee, FL 32399-0667, Job Order No. FL-1703956

COMPUTERWORLD
career@gent
careeragent.computerworld.com

Softwara Engineer (IBM Mainframe): Structured aystams analyais, design, devalopment, teating, quality assaurance, implementation, integration, maintenance, support & convarsion of large volume onlina tranaaction processing & batch application aystama in a multi-h'dware/multi-s'wara anviron. over cantrallzed databasa systema using raiational/hierarchical/natwork database mgmt syatams, Third Ganaration Languagas (3GLs), Fourth Ganaration Languagaa (4GLs), CASE toola & Transaction Processing Software. Reqs: B.S. in Comp. Sci., Math, Engr'g or Scl. (or equlv.) & 1 yr axp in job offered or as Programmer Analyst/Systams Analyst. Muat hava appropriate combination of skills sa follows: 1 of A & 1 of B & 1 of C; or 1 of A & 2 of B; or 1 of A & 2 of C: A includes DBMS: DB2, IMS DB, IDMS DB; B includes Tools: CICS, IMS DC, IDMS DC, ADS/O, QMF, VSAM, MF-Workbench; C includes Languages/CASE toola: TELON, IEF, ADW, CSP, APS. High mobility preferred. (Multiple positions) 40 hrs/wk; $49,000 - $60,000/yr; Report/Submit resume to PA Job Ctr, Ma. Joanne Lang, Mgr., Office of Employment Sacurity, 320 Blimar Dr., Pittaburgh, PA 15401. JO #5015500.



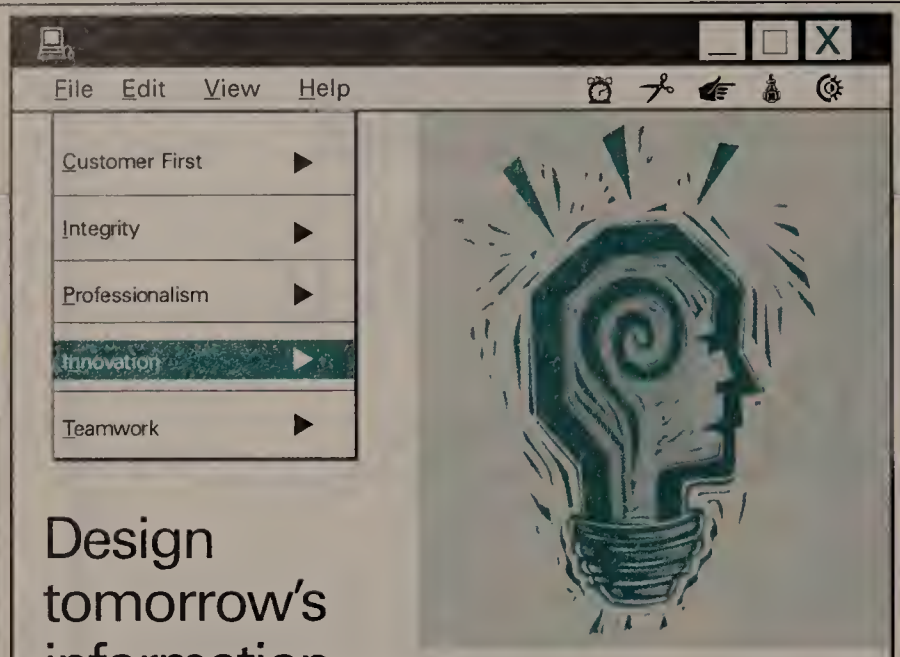
There's never been a better time to join Tivoli Systems.

As the leading provider of network computing management software, our innovative approach makes us the most widely respected and highly sought after provider in the marketplace. Tivoli can offer you the opportunity to work with state-of-the-art programming techniques and tools in a team-oriented and creative development environment. And at Tivoli Systems, we incorporate all of the elements that allow you to be your best, such as ambition, honesty, intelligence and talent. And not to mention fun! If you've been waiting for the perfect time to make your move... consider joining Tivoli! Extraordinary growth has created the following opportunities at our Austin, TX facility:

COMMUNICATIONS ANALYST
DIRECTOR OF TECHNICAL OPERATIONS
INFORMATION TECHNOLOGY BUSINESS LIAISON
MANAGER OF WEB/LOTUS NOTES APPLICATIONS
SAP SPECIALIST

Now is the perfect time to join Tivoli Systems. Please forward your resume to: **Samantha Silver, TIVOLI SYSTEMS, Inc., 9442 Capital of Texas Hwy. North, Suite 500, Austin, TX 78759. Fax: 512-436-1329. Ph: 512-436-8404. E-mail: samantha.silver@tivoli.com**
An equal opportunity employer, we value the diversity of our workplace.
For additional opportunities, visit our website at www.tivoli.com

Tivoli



Design tomorrow's information warehouse.

At USF&G, we're employing all the latest technologies to redefine our business activities and guide us into the next century. Our teams are pushing the information warehousing envelope using the latest Internet-enabled ROLAP technologies. Join our team of talented professionals at our Baltimore, MD, location, in any of the following roles:

Senior Warehouse Architect
In this role, you'll develop/plan/deploy information warehouses and marts. To succeed, you'll need 5+ years' experience in planning, small team management and strong presentation and communications skills.

Warehouse Architect
You'll help design new information warehouses/marts. To succeed, you will need 2-5 years of experience in data modeling, relational database design or data conversion/transformation/analysis.

We are a Unix/Sybase shop and use ETI for data conversion. Unix/Sybase experience is preferred, but any relational database experience will be considered. Any data conversion product experience is sufficient. Training will be provided.

Ensure exciting challenges in your career. Forward your resume, indicating area of interest, to: USF&G, ATTN: Dept. 1SADCW78, 5801 Centennial Way, 1S2WHR, Baltimore, MD 21209; FAX: (410) 578-3156; e-mail: techjobs@usfg.com

An equal opportunity employer.

USF+G INSURANCE

Visit our Web site: www.usfg.com

To develop and grow, you need exposure to all the right elements

98 CORPORATE TECHNICAL RECRUITING CONFERENCE COMPUTERWORLD

ORLANDO FLORIDA

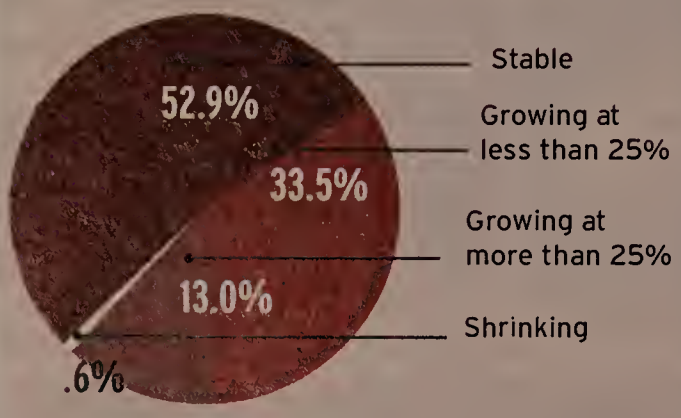
May 17-20, 1998
Marriott's Orlando World Center Resort

1-800-488-9204

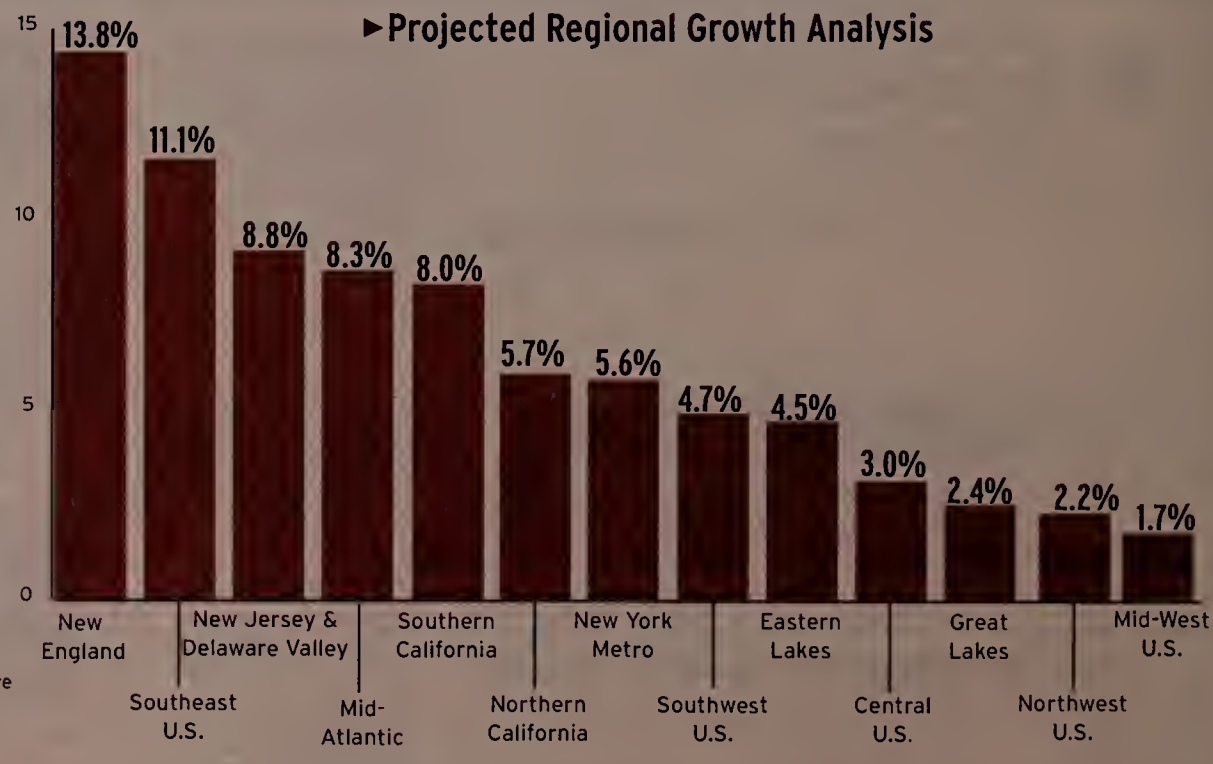
CAREER SURVEY

Factory Automation

►Industry Hiring Trends
Overall growth rate: **5.2%**



►Projected Regional Growth Analysis



Survey Base: 53 Technology Firms involved in Factory Automation Software
Survey conducted between September '97 and November '97;

CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000 technology manufacturers. This survey relates to the 31,693 tracked firms with fewer than 1,000 employees.

Copyright 1997, Corporate Technology Information Services, Inc., Woburn, MA

FIVE OPENINGS FOR SENIOR SOFTWARE ENGINEER VOICE PROCESSING SYSTEMS: Design and develop the telephone switch integration and interface with voice processing systems utilizing the knowledge of real-time softwere design end programming techniques, Unix, C/C++, TCP/IP network protocol, Informix (SQL, 4FL, ESQL) Client/Server database. Design, develop, end optimize the large capacity, fault tolerant VoiceMail end Speech Storege File System for telephone central office. Design special software on OS/2 platform to generate high volume of telephone traffic to ensure voice processing software reliability. Analyze, review end rewrite programs to increase operating efficiency end correct bugs in the modules. Diagnose voice processing software and hardware problems. Provide technical support to customer service and sales engineering upon request. Requires a Bachelor's degree in Computer Science or Electrical Engineering or Computer Engineering and three years experience in job offered or three years related real-time telecommunication software design and development experience using C/C++; or will consider a Masters degree in Computer Science or Electrical Engineering or Computer Engineering and one year experience in directly related real-time telecommunication software design end development experience using C/C++ in lieu of Bachelor's degree end three years experience. 40 hour work week. $43,225-$61,159 per year. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O.# TX0241618. Ad Paid by an Equal Opportunity Employer.

Project Leed, Embedded & Real-Time Software Systems. Serve as a lead member of a multi-phase project development team in charge of design, development, coding & unit testing of embedded software systems for communication products. Develop products' functional specifications & conduct review meetings for specification document. Plan & schedule tasks involved. Track progress of project & its compliance w/original design. Develop new features for NW Mgm't Card Software for Total Control WAN HUB product using PVCS Source Control System, C, ASM, UNIX tools & runtime interpreters & compilers. Add additionel SLIP port functionality & bulk file up-/down-load features to NW Mgm't Card using TFTP. Lead team in implementing products' functions & recommend development & coding techniques. Prepare written reports based on research/test findings & present them to Mgm't. Reqmnt's: M.S. in Comp. Info. Syst., 3 yrs. exp. in job offered. 40hrs, (M-F, 8-5); $62,000/yr. Must have proof of legal authority to work permanently in U.S. Send 2 copies of both resume & cover letter to: S. Lindsey, #V-IL 17977-L, IL Dept. of Employment Security, 401 S. State-7N, Chicago, IL 60605. No Calls. Employer paid ad

Programmer/Analyst - client sites & Co. loc in Herrisburg, PA. Analyze, design, develop, implement & maintain Pick & Unidata applics. Oversee multiple projects. Utilize Pick Operating System, Unidata, Pickbesic, Uniquery s/ware & Visual Basic. Bachs/Computers, Meth or Engg. 1 yr/exp. in job offered or 1 yr as Programmer. Exp. in job offered or related occ must incl. 1yr using Pick Operating System, Unidete, Pickbesic, Uniquery & Visual Basic. 40hrs/wk (8-5; M-F) $40,513/yr. Submit resume to the PA Job Center at: Capitol Region Job Center, 2971 North Seventh St., Harrisburg, PA 17110-2125. Refer to Job Order #PA8030820.

PSC OUR STAFF MAKES US #1, WE NEED YOU TO KEEP US THERE!

We have immediate openings in Phoenix, Arizona for highly motivated and career oriented consultants with at least 2 years experience in one or more of the following:

DISTRIBUTED/CLIENT-SERVER
- C/C++
- Designer/Developer 2000
- Java/CGI/HTML/ActiveX
- Visual Basic and/or PowerBuilder, SQL
- D&B Client Server
- SAP R/3
- Visual Age
- Oracle DBA
- Lotus Notes
- Rational Rose

SOFTWARE ENGINEERING
- UNIX/C/MOTIF
- UNIX/C++/CORBA

MAINFRAME
- COBOL
- SAS
- DB2
- IMS
- CICS
- J.D. EDWARDS
- IMS and/or DB2 DBA
- PLI

Please call, mail or fax resumes to:
Professional Software Consultants, Inc.
Keith Volk
4747 N. 7th St. #424, Phoenix, AZ 85014
(800) 279-4498, Fax (602) 279-1161
resumes@psc.dprc.com
Member NACCB A DPRC Company

DATA WAREHOUSING

Stopka and Associates is one of the country's fastest growing privately held information technology consulting companies. Over the past 3 years Stopka and Associates has grown by more than 2000% including the opening of 13 offices. Our clients are looking to us to provide Data Warehousing consultants with any of the following skills:

- Project Management
- METADATA
- Informix
- Financial Systems
- Teradata
- Sybase
- Data Cleansing/Extract
- Retail Systems
- D/W Tool Selection
- Systems Architecture
- Express
- Oracle
- OLAP
- Data Analysis

If you are interested in working for a company that focuses on today's technology and values loyalty, please fax (847) 634-7305 or send your resume to:

Stopka and Associates
101 Schelter Road Suite A103
Lincolnshire, Illinois 60069

TRIAD DATA INC.

Since 1985, **Triad Data** has placed talented professionals with Fortune 100 clients nationwide. We are a computer consulting company with opportunities for **Programmer/Analysts, Systems Analysts** and **Software Engineers** with the following skills:

Cobol (IMS or DB2) ■ PL1 ■ Adabas/Natural ■ CICS Unix ■ C/C++/Java ■ Oracle ■ Visual C++ ■ Smalltalk Peoplesoft ■ Sybase Developers ■ CNE ■ Lotus Notes Windows NT ■ PC Support/Help Desk ■ Oracle DBA Delphi ■ Informix Developers ■ Internet Developers Systems Administrators-Unix, Windows NT, Novell

Multiple positions are available in the following metropolitan areas:
■ Boston ■ Madison ■ Milwaukee ■ Minneapolis ■ Austin ■ New York City ■ Atlanta ■ Dallas

We offer medical/dental insurance, vacation, 401K, referal bonuses, and more. For immediate consideration, send or fax your resume to M. Jackman, Triad Data, Inc., 515 Madison Ave., Suite 1810, New York, NY 10022; FAX: 212-832-7091
e-mail: mjackman@nyc.triaddata.com

EXCELLENCE UNITES US AND SETS US APART

Exceptional individuals united in the pursuit of excellence make the Solutions Thru Technology practice of Coopers & Lybrand Consulting unique in our field. The strength of our National Data Warehousing Practice is firmly based on the vision and commitment of each member of our consulting team. Today, as demand for our talent continues to escalate, we are rededicating ourselves daily to the highest standards of personal and business performance. And we're searching out proven professionals who, like us, welcome the opportunity to reach a new level of accomplishment.

Data Warehousing Consultants

Successful candidates will work on high visibility Data Warehousing projects with key clients throughout the country. We have immediate opportunities **at various locations throughout the United States.**

- **Project Managers**
- **Architects**
- **Data Modelers**
- **OLAP Analysts**
- **DSS/EIS Developers**
- **Database/System Administrators**
- **Business Development**

Knowledge of Data Warehousing, Data Mining, and Decision Support Concepts is desirable, as is experience with the following software:

- **MicroStrategies**
- **Comshare**
- **Essbase**
- **Oracle**
- **Business Objects**
- **Cognos**
- **Hyperion**

Coopers & Lybrand offers one of the industry's most attractive compensation packages, a commitment to career development and education, and an outstanding work environment. If you thrive on challenges, rise to new challenges with us. Send your resume, indicating preferred location, to: Coopers & Lybrand L.L.P., Attn. Roy Dube, 85 W. Algonquin Road, Suite 390, Arlington Heights, IL 60005. Fax: (847) 590-8955, E-mail: roy.dube@us.coopers.com
An Affirmative Action/Equal Opportunity Employer. **www.colybrand.com**

National Data Warehousing Practice

Coopers & Lybrand
Coopers & Lybrand L.L.P.
a professional services firm
SOLUTIONS THRU TECHNOLOGY

WE HAVE GREAT OPPORTUNITIES FOR YOU!

Romac International, selected to the Forbes Magazine *List of America's 200 Best Small* Companies for the second consecutive year, has opportunities in the following areas:

VB/ACCESS/SQL SERVER, POWERBUILDER, SYBASE, ORACLE, C/C++, COBOL/ IMS/DB2/CICS, ADABAS/NATURAL, TANDEM, Y2K

Romac also has openings for Technical Recruiters.

Romac offers outstanding fringe benefits including stock options, 401K, training, relocation assistance and performance bonuses.

ROMAC INTERNATIONAL
PH: (800) 682-9784 or
(502) 339-2900
FAX: (502) 339-2888
E-MAIL: talvey@romac.com
Equal Opportunity Employer

Programmer/Analyst. Computer programming and systems analysis using MVS, DB2, CICS and COBOL on the IBM Mainframe computer system. Must have two years experience in the job offered, as a Computer Programmer, Associate Programmer or any combination thereof. Experience in job offered or in related occupations must include 6 months using MVS, DB2, CICS and COBOL on the IBM ES9000 Mainframe computer system. 40 hrs./wk. 9 am to 5 pm. $55,000/yr. Must have proof of legal authority to work in the United States. Send your resume to the Iowa Workforce Center, 800 Seventh Street SE Cedar Rapids, Iowa 52406. Please refer to Job Order IA1100672. Employer paid advertisement.

SOFTWARE ENGINEER: Software development for the IBM AS/400 platform using C, COBOL, SQL & DB2. Analyze, design & code applications followed by installation, customization, testing & user training. Three years experience required in any occupation performing job duties described above. Must have proof of legal authority to work in the U.S. Salary - $48,000/year for a 40 - hour work week. Interested applicants send resume to FDLES Bureau of Operations, 1320 Executive Center Dr., Ste. 110, Tallahassee, FL 32399-0667. Re: Job Order Number FL-1708394. Ad paid by an Equal Opportunity Employer.

SAP



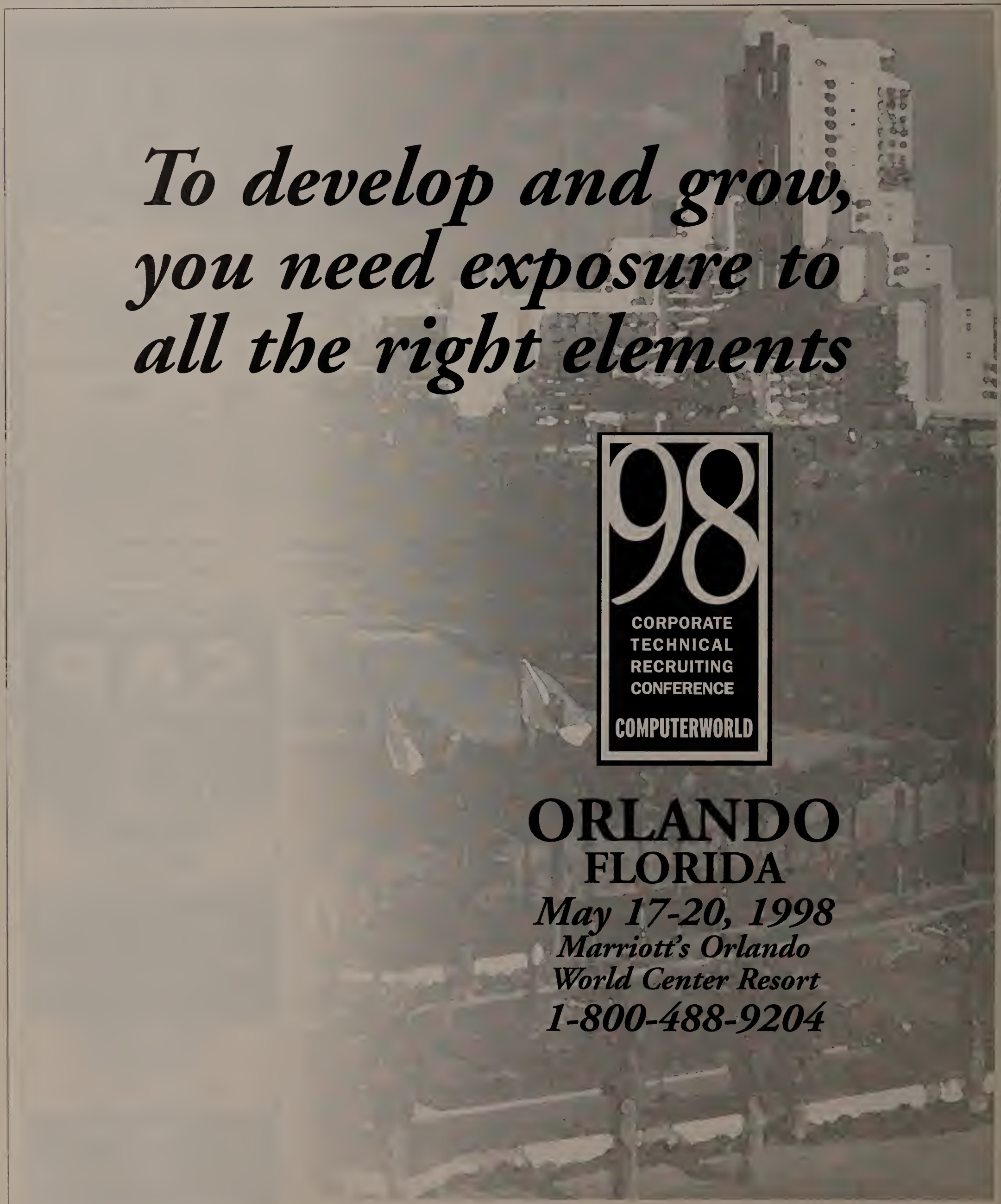
WORLDWIDE IMPLEMENTATIONS

ALL MODULES
FUNCTIONAL
CONFIGURATION
ABAP
BASIS

POSITIONS THROUGHOUT THE U.S. AND ABROAD

1975 North Park Place
Atlanta, GA 30339
800-599-9550
770-955-1714
FAX: 770-937-0423
e-mail: slc11@aol.com
EOE, MEMBER NACCB

STRUCTURED LOGIC COMPANY, INC.
SAP NATIONAL Implementation Division


To develop and grow,
you need exposure to
all the right elements
98
CORPORATE
TECHNICAL
RECRUITING
CONFERENCE
COMPUTERWORLD
ORLANDO
FLORIDA
May 17-20, 1998
Marriott's Orlando
World Center Resort
1-800-488-9204

We'll Have Internet Professionals In Line To Keep You On-Line.

Finding the right Internet professionals can be difficult. That's why more and more companies turn to Shomex Job Fairs. We have 14 years experience helping employers find the best technical professionals. At the Internet Career Expo, you can meet face-to-face with:



Content Developers, Graphic Artists, Electronic Media Designers, Solution Integrators, Internet Consultants, JAVA/HTML Programmers, Networking and LAN Managers, G.U.I. Designers, Security Specialists, Systems Administrators and Webmasters.

COMPUTERWORLD
c@reers
Our Tech Journal Partner

INTERNET Career Expos
Nothing But Net

TUESDAY, MARCH 3, 1998

SAN JOSE MCENERY CONVENTION CENTER
408 S. Almaden Blvd. • San Jose, CA 95110
Exhibit Hours: 11:00am - 1:00pm & 3:00pm - 7:00pm

Call today 1-800-562-7469

to reserve your booth space for the largest live, in-person Internet job fair in the country!

Event Management by
SHOMEX

Across The Board, Across The Nation
We've Got The Recruiting Solutions To Meet Your Needs

2601 Ocean Park Boulevard, Suite 200, Santa Monica, CA 90405 • (310) 450-8831 • Fax: (310) 396-3157 • www.internetcareerexpo.com

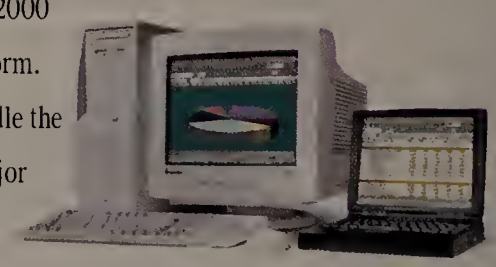


Corporate America

Corporate America has a new look these days thanks to a *Fortune* 500 PC manufacturer from South Dakota. From a two-person start-up operation in 1985 to a $5 billion global company in 1996, Gateway 2000 has taken the PC industry *and* corporate America by storm.

Gateway 2000 Major Accounts, Inc. is there to handle the unique needs of large-volume purchasers. Gateway Major Accounts delivers Value of Ownership: the winning combination of high benefits and low cost for the life cycle of your computer. High-quality PCs custom built for your business that go to work for you right out of the box — that's Gateway.

Want to know more about this cow-spotted business phenomenon? Call our Gateway Major Accounts representatives today, because we mean business.



GATEWAY™ E-Series desktop and Gateway Solo™ portable PCs feature Intel Pentium processors.

MMX™ intel inside pentium® II PROCESSOR

GATEWAY2000

"You've got a friend in the business."®

8 8 8 - 8 8 8 - 0 3 8 2

www.gateway.com/majoraccounts.htm

Gateway 2000 Major Accounts, Inc.
610 Gateway Drive • P.O. Box 2000
N. Sioux City, SD 57049-2000

GSA Schedule #GS-35F-4565G

Gateway, "You've got a friend in the business," and the Gateway design are registered trademarks, and GATEWAY and Gateway Solo are trademarks of Gateway 2000, Inc. Intel and Pentium are registered trademarks, and MMX is a trademark of Intel Corporation. Not all Gateway E-Series desktop PCs contain the Pentium II processor. Gateway Solo portable PCs do not contain the Pentium II processor. Gateway 2000 Major Accounts, Inc. is a wholly owned subsidiary of Gateway 2000, Inc.

Marketplace

For information on advertising, call 888-901-2006

Secure Only The Computers You Want To Keep

Secure-It, Inc. is a leader in computer security, having the highest quality and the largest selection of products to suit your needs. Our computer security staff is ready to assist you in solving your problem to minimize your risk. They can suggest an existing package, or assemble a special package just for you.

Secure your:

• Notebooks • Desktops • Peripherals • Internal Boards
• Disk Drives • CD Roms • Etc.

For a FREE consultation, or a FREE catalog ...
Call Today!
800-451-7592 Dept. CW

Secure-It

18 Maple Court, East Longmeadow, MA 01028, USA Phone: 413-525-7039 Fax: 413-525-8807
Dealer inquiries invited • Mastercard accepted

NetCom 3 Connectivity Without Clutter.



DESIGNED FOR COMPUTER EQUIPMENT AND ACCESSORIES, NETCOM3 IS BUILT TO MAXIMIZE WORKSPACE AND IMPROVE OPERATOR PRODUCTIVITY.

PARALAX

CORPORATE HEADQUARTERS
2550 WEST MIDWAY BLVD.,
BROOMFIELD, COLORADO 80020
TEL: 303/465-2800
SALES LINE: 800/4321-EDP
SALES FAX: 800/EDP-3490

A product of
edp engineered data products INCORPORATED
Linking People and Technology.

EDP EUROPE LTD.
43 REDHILLS ROAD,
SOUTH WOODHAM FERRERS,
CHELMSFORD; ESSEX CM35UL
TEL: (44) 1245-322380
FAX: (44) 1245-323484

WEB SITE: WWW.EDP-USA.COM

Alicomp

Which has serviced over 195 diverse clients, specializes in providing VM, MVS, VSE service to clients who need:

- **OUTSOURCING**
- **REMOTE COMPUTING**
- **YEAR 2000: Mainframe Conversion Test Environment**
- **TAPE CONVERSIONS**
- **SYSTEMS PROGRAMMING & NETWORKING SUPPORT SERVICES**

Industry experience includes: •Financial Services •Non Profit •Software Developers •Healthcare •Manufacturing/Distributing •Publishing

We are the "Boutique" of the Computer Services World

Serving Clients since 1980

(201) 840-4900 • (800) 274-5556

For information on advertising, call 888-901-2005

Marketplace

Intel Pentium II 300 MMX (DVD)



- 512k Pipeline Cache
- 64 Meg EDO Memory
- Mid Tower ATX Case
- 5.0 Gig IDE Hard Drive
- 20x CD-ROM (2x DVD)
- 1.44 Floppy Drive
- 16 Bit Sound Card
- 300 Watt Speaker System
- Mouse/pad
- Keyboard
- Gooseneck Microphone

$1,690.00

Monitor and Operating System sold separately.

3 Year Warranty

14" **$129** 5+ 1024 x 768 NI



15" **$179** 5+ 1280 x 1024 NI

17" **$359** 5+ 1280 x 1024 NI

DXM Computer, Inc.
1 (800) dxm4usa • Fax 1(401) 434-0260
www.dxmusa.com

Price reflects a 2.5% cash discount.
Prices subject to change without notice.
Complete spec's visit our web site

Looking For The BEST Company To Give You The BEST Value In IBM Computer Hardware?

We're IBM Experts:

- RS/6000
- ES/9000
- AS/400
- Series/1
- PCs
- Networks & Integration

Sales & Rentals

- ✓ Processors
- ✓ Peripherals
- ✓ Upgrades
- ✓ New
- ✓ Reconditioned With warranty



- Product Specialists
- Pretested equipment
- Flexible financing
- Configuration planning
- Offices nationwide
- Technical support
- Overnight shipping

IBM Business Partner

http://www.dempseybus.com
e-mail: dempsybus@dempseybus.com

Dempsey BUSINESS SYSTEMS
2136 Michelson Drive · Irvine, CA 92612-1304
Phone: (714) 475-2900 Fax: (714) 475-2929

Buy • Sell • Rent (800) 888-2000

NEED HELP WITH NT?

1.900.GET.NT.HELP

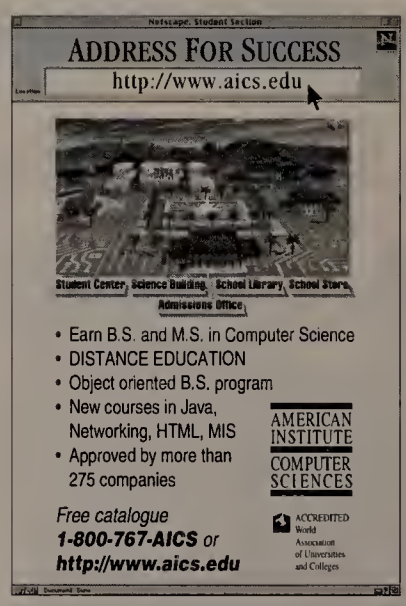
$3.95/minute (1.900.438.6843)

Unlimited access to world-class Microsoft NT/BackOffice Certified Professionals.

Microsoft Certified Solution Provider

TransTech ADMINTEAM AN INC. 500 COMPANY

www.trans-tech.com
ntadmin@trans-tech.com



GET NOTICED

RUN IN CARD DECK

(888) 901-2005

If you sell IT Direct

Your ad needs to be in this section

COMPUTERWORLD Product Direct

Computerworld Product Direct

The advertising section that puts you directly in the buying channel for corporate enterprise IT products and services.

To advertise, contact: Computerworld Direct Channel Sales (888) 901-2005

ADVERTISERS INDEX

Advanced Logic Research 42
http://www.alr.com

BMC Software. 43, 45, 47
http://www.bmc.com

Cabletron. 15
http://www.cabletron.com

Cisco 32
http://www.cisco.com

Compaq Computer Corp. 18-19, 38-39
http://www.compaq.com

Computer Associates 22-23
http://www.cai.com

Fuji Photo Film USA 10
http://www.fujifilm.com

GTE 26-27
http://www.gte.com

IBM 30-31
http://www.ibm.com

Information Builders. C4
http://www.ibi.com

Intranet Series 40/41

Logic Works 17
http://www.logicworks.com

Managing Automation. 54
http://www.masg.com

Micro Focus 9
http://www.microfocus.com
(800) 872-6265

Micron 57
http://www.micron.com

Nortel North America 44
http://www.nortel.com

Oracle Corp. 7, 11
http://www.oracle.com

SAS Institute. 13, 46
http://www.sas.com

Sun Microsystems 34-35, 48-49
http://www.sun.com

Sybase C3
http://www.sybase.com

Syncsort 5
http://www.syncsort.com

System Software Associates 50
http://www.ssax.com

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:

Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here Address shown: ☐ Home ☐ Business

Name

Company

Address

City State Zip

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: 1-800-552-4431 Outside U.S. call (614) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address – COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701.

Name
Title
Company
Address
City
State
Zip

SALES OFFICES

COMPUTERWORLD HEADQUARTERS: 500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171
Phone: (508) 879-0700, Fax: (508) 875-4394

Senior Vice President/Publisher Peter C. Weedfald

Vice President/Custom Publications Elaine R. Offenbach

Vice President/Marketing Cynthia L. Ahart

Regional Vice President North/Central Sherry Driscall

Regional Manager East Christopher E. Thomas

Vice President/ Associate Publisher West Bill Haward

National Director Business Development John Gordon

National Director Channel Sales Lisa P. Caldwell

NORTH/CENTRAL

Director: Isabelle Kane; Senior District Manager: Kim DiMascia; District Manager: Laurie Marinane; Account Executive: Dianne McNeil; Sales Associates: Karen Beasley, Cheryl Strattan, 500 Old Connecticut Path, Framingham,MA 01701 (508) 879-0700 Fax: (508) 270-3882 TDD: (800) 428-8244

Sr. Account Executive: Laurie Gomes; Sales Associate: Jasmine Huffman, 875 N. Michigan Avenue, Suite 2846, Chicago, IL 60611 (312) 943-4266 Fax: (312) 943-2214

Senior District Manager: Jennifer Hedges; Sales Associate: Brenda Shipman, 14651 Dallas Parkway, Suite 118, Dallas, TX 75240 (972) 233-0882 Fax: (972) 701-9008 TDD: (800) 822-4918



EAST

Director: Fred LaSapia; District Managers: Kim Bailey, John Basso; Account Executive: Maureen Grady; Sales & Office Associate: Susan Kusnic; Sr. Sales Associate: Jean Dellarobba; Sales Associates: Kristen Majerczak, John Radzniak, Mack Center 1, 365 West Passaic St., Rachelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288

Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288

WEST

Director: Ernie Chamberlain; District Managers: Aimee Einstein, Angela Flares, Denyce Kehoe; Sr. Account Executive: Claude Garbarina; Account Executives: Larisa Gagainis, Andrea Zurek; Sales Associates: Bannie Ja Bouchard, James Dunn, Alicia Giavannini, Amy Hudson, Nipaol Patel; Operations Coordinator: Emmie Hung; Office Services: Jessica Abude; Sales Caordinator: Yvanne Zuniga, 500 Airpart Baulevard, Suite 400, Burlingame, CA 94010 (650) 347-0555 Fax: (650) 347-8312 TDD: (800) 900-3179

Senior District Manager: Cindy Wager; District Manager: Jasan Sparks; Account Executive: Rabert Pietsch; Sales Associate: Pat Duhl, 2171 Campus Drive, Suite 100, Irvine, CA 92612 (714) 250-3942 Fax: (714) 476-8724

ADVERTISING OPERATIONS PRINT & ON-LINE

Display Advertising Caardinators: Lisa Tanner, Gregg Pinsky, (508) 879-0700 Fax: (508) 879-0446

CUSTOM PUBLICATIONS

Boston: Director of Publishing Services/Carolyn Medeiros; Project Coordinator/Heidi Broadley; Managing Editor/Peter Bochner; Graphic Designer/Gail Varney, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 Fax: (508) 875-6310

San Francisco: Vice President Custom Publications/Elaine R. Offenbach; Sales Operations Coordinator/Nikki Wilson, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 Fax: (415) 347-8312

East: Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289

NATIONAL CHANNEL SALES

National Director/Lisa Caldwell

Marketplace: 8411 Clyo Rd., Dayton, OH 45458, (937) 436-2005/(888) 901-2005 Fax: (937) 436-2134

Director Response Cards: 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

National Accounts Director/Norma Tamburrino, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090

COMPUTERWORLD INFORMATION MANAGEMENT GROUP

Vice President/General Manager: Richard Mikita

Computerworld VAR Database: (508) 879-0700 Fax: (508) 879-0184

Computerworld Buyers Database East: (508) 879-0700 Fax: (508) 879-0184

Computerworld Buyers Database West: (415) 347-0555 Fax (415) 347-8312

BUSINESS DEVELOPMENT

National Director/John S. Gordon; 990 Hammond Dr., Ste. 600, Atlanta, GA 30328 (770) 668-5414 Fax (770) 394-6354

RECRUITMENT ADVERTISING SALES OFFICES

Vice President Recruitment Advertising/John Corrigan; Marketing Director/Derek E. Hulitzky; Operations Director/Cynthia Delany, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

New England & Upstate New York: Regional Manager/Nancy Percival, 500 Old Connecticut Path, Framingham, MA 01701 (800) 343-6474, Sr. Account Executive/Nancy Mack, (800) 343-6474

Mid-Atlantic: Regional Manager/Jay Savell, 961 Marcon Blvd., Suite 409, Allentown, PA 18103 (610) 264-7700, Sr. Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 208-0288

South Atlantic: Regional Manager/Katie Kress-Taplett, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115, Sales Manager/Pauline Smith (800) 343-6474

Midwest: Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Account Executive/Nick Burke (800) 343-6474 TDD: (800) 227-9437

Northwest: Regional Manager/Christopher Glenn, 500 Airport Blvd., Ste. 400, Burlingame, CA 94010 (415) 665-2443, Account Executive/Fabiola Franz, (800) 343-6474

West: Regional Manager/Ellen Cross, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Account Executive/Jeff Yoke (800) 343-6474 TDD: (800) 203-5867

CAREER AGENT

Director of Partner Programs/Kaye Sharborough, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 Fax: (415) 347-8312

MARKETING: *Vice President, Marketing*/Cynthia L. Ahart, *Marketing Director*/Elizabeth Phillips, *Manager, Trade Shaw & Events*/Audrey Abbatt, *Sales Development Manager*/Susan Thaxter, *Marketing Communications Project Manager*/Karen Sambraak, *Marketing Manager (Events)*/Stuart C. Dale, *Marketing Specialist*/Emily Dinneen
CIRCULATION: *Vice President Circulation*/Maureen Burke **PRODUCTION:** *Production Director*/Christopher P. Cuaca, *Production Manager*/Beverly Wolff **DISTRIBUTION**: *Distribution Manager*/Bob Wescott, *Traffic Manager*/Pat Walker

COMPUTERWORLD

President/CEO Jim Martin

Vice President/Editor Paul Gillin

Senior Vice President/Finance Matthew C. Smith

Senior Vice President/Consumer Marketing Gail Odeneal

Vice President/ Recruitment Advertising John Carrigan

Vice President of IS Richard Broughton

Vice President/General Manager New Media & Information Mgmt Richard Mikita

Vice President/ Human Resources Susan C. Perry

INTERNATIONAL DATA GROUP

Chairman of the Board. Patrick J. McGovern **President.** Kelly Conlin **Chief Operating Officer** Jim Casella

IDG

Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 285 computer publications in over 75 countries. Sixty million people read one or more International Data Group publications each month.

STOCK TICKER

The Week in Stocks

Gainers

PERCENT

Pinnacle Micro Inc.(L)	116.7
General Datacomm Inds.(L)	40.0
Comshare Inc.	23.1
Brooktrout Technology	23.1
Arbor Software	21.9
QMS Inc.(L)	17.9
Micrel Semiconductor Inc.	16.4
Micro Touch Systems Inc.(L)	16.4

DOLLAR

Arbor Software	6.88
AMERITECH Corp.	4.25
S8C Communications(H)	4.13
Electronic Data Systems Corp.	4.06
Paychex	3.88
Micrel Semiconductor Inc.	3.75
Computer Horizons	3.50
Computer Sciences	3.50

Losers

PERCENT

Systemsoft Corp.(L)	-28.3
Spyglass Inc.(L)	-26.0
Netrix Corp.	-23.8
Corel Corp.(L)	-23.5
Applix Inc.	-20.0
Banyan Systems Inc.	-19.1
Borland Int'l Inc.	-17.8
System Software Assoc.	-16.8

DOLLAR

Dell Computer Corp.	-10.00
Microsoft Corp.	-9.06
CompUSA Inc.	-4.44
American Power Conversion	-3.88
Compaq Computer Corp.	-3.75
Northern Telecom Ltd.	-3.50
Parametric Technology	-3.00
At Home Corp.	-2.94

INDUSTRY ALMANAC

Rewiring the hard drive

The hard drive manufacturing industry is experiencing a bust cycle because of an oversupply problem that's forcing the leading vendors to swallow price cuts.

Shares in disk drive companies have fallen steadily in recent weeks amid manufacturers' announcements of weak earnings, planned production cuts and restructuring charges.

Western Digital Corp. (NYSE: WDC) in Irvine, Calif., earlier this month announced that it planned to break even for its second fiscal quarter ending Dec. 27 and that it will be modestly profitable for its full fiscal year ending next June. Company officials said sustained oversupply and competitive pricing pressures are to blame, and they outlined plans to reduce production of some desktop drives.

"For Western Digital, it's two steps back to take three steps forward," says Michael Geran, a Jersey City, N.J.-based analyst at the Pershing division of Donaldson, Lufkin & Jenrette, Inc. "They have a strong balance sheet and good products, but it may be two quarters before profits return." Geran has a Hold/Buy rating on the stock.

Seagate Technology, Inc. (NYSE:SEG) also has suffered industry woes. The Scotts Valley, Calif., company announced in late November that weak demand for its high-end products will mean low earnings for its quarter ending in January 1998.

"In addition to overly optimistic demand forecasts, Seagate is dealing with other problems, like having too many plants in operation right now," says David Takata, an analyst at Gruntal & Co. in Los Angeles. Seagate announced Dec. 10 that it would close a manufacturing plant in Ireland and lay off 1,400 workers there.

"We might have a few more quarters of weakness, but then the industry should get back into balance," Takata says.

— Nancy Dillon

DISK STORAGE SLUMP

Disk drive stocks have been falling for several months, and analysts say the bust cycle may last a few more quarters



Exch	52-Week High	52-Week Low	Range Close		Dec. 19 2 PM	Wk Net Change	Wk Pct Change
Communications and Network Services							**OFF 1.82%**
COMS	80.00	24.00	3 COM Corp.		32.06	-2.00	-5.9
AIT	82.50	54.75	AMERITECH Corp.		82.50	4.25	5.4
ASND	80.25	22.00	Ascend Communications		25.06	-2.56	-9.3
T	60.38	30.75	AT & T (H)		60.38	2.94	5.1
BNYN	5.75	1.19	Banyan Systems Inc.		2.38	-0.56	-19.1
BAY	41.88	15.38	Bay Networks Inc.		23.13	-0.81	-3.4
BEL	91.75	56.75	Bell Atlantic Corp. (H)		89.13	-0.06	-0.1
BLS	57.50	36.88	Bellsouth Corp.		55.50	0.00	0.0
BRKT	29.75	9.25	Brooktrout Technology		12.00	2.25	23.1
CS	46.50	13.56	Cabletron Systems (L)		13.75	-0.06	-0.5
CGRM	21.88	8.63	Centigram Communications		15.50	0.75	5.1
CSCO	60.63	30.25	Cisco Systems Inc. (H)		52.88	1.73	3.4
CMNT	7.00	3.31	Computer Network Tech.		3.63	-0.06	-1.7
DIGI	32.75	16.88	DSC Communications		21.00	-0.81	-3.7
FORE	36.13	10.00	FORE Systems Inc.		15.13	-0.88	-5.5
GDC	11.88	3.25	General Datacomm Inds. (L)		4.81	1.38	40.0
GSX	53.00	36.13	General Signal Networks		40.75	0.06	0.2
GTE	52.25	40.50	GTE Corp.		49.88	0.56	1.1
LU	90.75	44.75	Lucent Tech.		75.50	-0.06	-0.1
MADGF	16.13	4.38	Madge Networks NV (L)		4.38	-0.50	-10.3
MCIC	45.00	27.31	MCI Communications Corp.		43.81	0.25	0.6
NETM	7.63	2.09	NetManage Inc. (L)		2.50	0.06	2.6
NTRX	7.00	0.94	Netrix Corp.		1.00	-0.31	-23.8
NCDI	16.25	5.88	Network Computing Devices (L)		7.75	0.38	5.1
NWK	22.38	11.25	Network Equipment Tech.		13.19	-0.31	-2.3
NN	69.38	27.25	Newbridge Networks Corp.		35.00	-1.00	-2.8
NT	113.88	58.63	Northern Telecom Ltd.		86.69	-3.50	-3.9
NOVL	13.00	6.28	Novell Inc.		7.53	-0.34	-4.4
ODSI	19.25	5.50	Optical Data Systems Inc. (L)		5.50	-0.75	-12.0
PCTL	26.88	5.88	Picturetel Corp. (L)		5.88	-1.00	-14.5
PTON	3.69	1.13	Proteon Inc. (L)		1.19	-0.22	-15.6
RACO	4.88	1.00	Racotek Inc.		1.44	0.00	0.0
RETX	9.00	3.38	Retix		4.13	0.00	0.0
SBC	75.94	48.50	SBC Communications (H)		74.94	4.13	5.8
SFA	24.94	14.25	Scientific Atlanta Inc.		16.81	-1.75	-9.4
SHVA	40.38	8.13	Shiva Corp.		8.94	-0.56	-5.9
FON	60.63	37.50	Sprint Corp.		55.63	-1.94	-3.4
SMSC	18.13	8.00	Standard Microsystems Corp. (L)		8.38	-0.50	-5.6
USW	46.63	30.63	US West Inc.		45.38	0.06	0.1
XIRC	31.13	7.50	Xircom		9.94	-1.06	-9.7
XYLN	37.25	12.38	Xylan Corp.		16.63	0.06	0.4
PCs and Workstations							**OFF 2.97%**
AAPL	29.56	12.75	Apple Computer Inc.		13.31	-1.00	-7.0
CPQ	79.56	28.50	Compaq Computer Corp.		53.38	-3.75	-6.6
DELL	103.88	25.00	Dell Computer Corp.		78.00	-10.00	-11.4
GTW	46.25	19.38	Gateway 2000 Inc.		32.00	1.50	4.9
HWP	72.94	48.13	Hewlett Packard Co.		60.44	-0.06	-0.1
MUEI	25.38	8.75	Micron International Inc. (L)		9.25	-0.50	-5.1
NIPNY	74.00	48.63	NEC America		51.50	-1.00	-1.9
SGI	30.31	12.50	Silicon Graphics		12.50	-0.81	-6.1
SUNW	53.31	25.50	Sun Microsystems Inc.		37.94	2.31	6.5
Large Systems							**OFF 3.73%**
DGN	37.94	13.63	Data General Corp.		16.38	-0.31	-1.9
DEC	53.81	25.00	Digital Equipment Corp.		36.75	-1.50	-3.9
IBM	113.50	63.63	IBM		100.69	2.69	2.7
MDCD	7.75	2.88	Meridian Data Inc.		3.75	-0.19	-4.8
PRCM	20.13	9.00	ProCom Technology, Inc.		14.63	0.25	1.7
SQNT	31.25	14.50	Sequent Computer Sys.		19.97	-0.44	-2.1
TEXM	6.00	2.06	Sequoia Systems Inc.		4.06	-0.69	-14.5
SRA	60.75	25.38	Stratus Computer Inc.		35.31	-0.69	-1.9
UIS	16.50	5.75	Unisys Corp.		12.00	-1.19	-9.0
Software							**OFF 3.14%**
ADBE	53.13	32.50	Adobe Systems Inc.		35.38	0.19	0.5
AMSWA	15.63	5.38	American Software Inc.		8.69	-0.19	-2.1
APLX	26.50	3.13	Applix Inc.		5.25	-1.31	-20.0
ARSW	53.25	17.00	Arbor Software		38.25	6.88	21.9
ADSK	51.13	26.50	Autodesk Inc.		33.06	-0.63	-1.9
BGSS	38.00	23.50	BGS Systems Inc.		34.00	0.00	0.0
BMCS	71.25	39.63	BMC Software Inc.		59.44	2.56	4.5
BOOL	35.25	19.63	Boole and Babbage		29.75	0.25	0.8
BORL	12.19	5.38	Borland Int'l Inc.		7.66	-1.66	-17.8
BOBJY	16.75	6.63	Business Objects		10.75	1.13	11.7
CAYN	6.25	2.00	Cayenne Software Inc.		2.00	-0.25	-11.1
CNTR	5.88	1.13	Centura Software		1.25	-0.13	-9.1
CHKPF	50.50	15.63	Checkpoint Software		37.00	-2.00	-5.1
COGNF	35.00	17.63	Cognos Inc.		21.50	1.00	4.9
CA	57.50	24.88	Computer Associates		48.94	1.38	2.9
CVN	9.88	1.94	Computervision Corp.		3.13	-0.19	-5.7
CPWR	39.50	12.06	Compuware Corp.		31.13	0.25	0.8
CSRE	18.88	4.25	Comshare Inc.		7.00	1.31	23.1
COSFF	8.25	1.63	Corel Corp. (L)		1.63	-0.50	-23.5
DWTI	6.63	2.25	Dataware Technologies Inc.		3.00	0.19	6.7
FILE	34.00	9.50	Filenet Corp.		25.25	-2.75	-9.8
FRTE	38.25	7.25	Forte Software		8.06	-1.19	-12.8
FTPS	8.38	1.50	FTP Software Inc. (L)		1.88	0.13	7.1
HUMCF	54.25	22.00	Hummingbird Comm. Ltd.		31.50	-2.00	-6.0
HYSW	46.00	13.00	Hyperion Software Corp.		34.88	0.88	2.6
IRIC	20.00	11.75	Information Resources		13.75	-0.81	-5.6
IFMX	24.38	4.59	Informix Corp. (L)		4.59	-0.69	-13.0
INGR	14.19	6.25	Intergraph Corp.		9.00	-0.38	-4.0
LEAF	4.00	0.81	Interleaf Inc.		3.69	-0.06	-1.7
ISLI	18.50	6.25	Intersolv Inc.		15.38	0.34	2.3
INTU	38.88	20.88	Intuit Inc.		35.13	1.00	2.9
TLC	20.50	5.50	Learning Co. (The)		15.50	-1.50	-8.8
LGWX	12.88	4.13	Logic Works		8.38	-0.13	-1.5
MAPS	14.25	7.88	MapInfo Corp.		10.00	-1.38	-12.1
MATH	5.13	2.19	MathSoft		3.34	-0.09	-2.7
MENT	13.13	6.50	Mentor Graphics		9.00	-0.13	-1.4
MIFGY	39.13	14.00	Micro Focus		37.25	0.88	2.4
MGXI	10.63	4.00	Micrografx Inc.		8.06	-0.19	-2.3
MSFT	150.75	76.38	Microsoft Corp.		127.38	-9.06	-6.6
OBJS	2.75	0.44	ObjectShare, Inc.		0.72	-0.03	-4.2
ORCL	42.13	21.75	Oracle Corp. (L)		21.81	-0.38	-1.7
PMTC	64.25	37.50	Parametric Technology		39.13	-3.00	-7.1
PSFT	38.38	15.31	Peoplesoft		32.63	0.63	2.0
PTEC	19.75	11.00	Phoenix Technologies		12.06	-2.25	-15.7
PSQL	13.75	6.50	Platinum Software		8.44	-0.31	-3.6
PLAT	30.81	10.25	Platinum Technology		22.50	-2.00	-8.2
PRGS	25.25	12.63	Progress Software Corp		19.88	0.13	0.6
RNBO	28.13	13.75	Rainbow Technologies Inc.		27.00	1.75	6.9
REDB	26.50	5.00	Red Brick Systems Inc.		5.88	-0.06	-1.1
ROSS	9.75	1.75	Ross Systems, Inc.		3.13	-0.13	-3.8
SAPE	61.00	30.00	Sapient Corp.		53.19	-0.13	-0.2
SCOC	8.63	3.13	SCO Inc.		4.00	-0.13	-3.0
SDTI	44.38	21.00	Security Dynamics Tech.		32.75	-1.50	-4.4
SOTA	18.00	8.88	State of the Art		16.50	0.50	3.1
SSW	41.19	27.25	Sterling Software Inc.		39.56	0.44	1.1
SDRC	30.00	15.25	Struct. Dynamics Research		17.25	0.06	0.4
SYBS	23.63	11.50	Sybase Inc. (L)		12.50	0.31	2.6
SYMC	27.75	12.00	Symantec Corp.		23.94	-0.50	-2.0
SNPS	47.13	21.75	SynOpsys		35.63	-2.75	-7.2
SSAX	17.63	3.88	System Software Assoc		8.38	-1.69	-16.8
SYSF	18.00	4.75	Systemsoft Corp. (L)		4.75	-1.88	-28.3
TRUV	5.19	1.50	Truevision Corp.		2.06	-0.31	-13.2
VMRK	11.75	5.75	VMark Software Inc.		7.63	-0.50	-6.2
WALK	18.25	10.50	Walker Interactive Systems		13.19	0.69	5.5
WALL	29.13	12.75	Wall Data Inc. (L)		12.75	-2.00	-13.6
WANG	25.00	16.00	Wang Laboratories Inc.		19.47	-0.03	-0.2
Internet							**OFF 4.34%**
AMZN	66.00	15.75	Amazon.com		52.00	-2.13	-3.9
AOL	91.13	31.00	America On-Line		84.25	-1.06	-1.2
ATHM	30.63	16.63	At Home Corp.		24.00	-2.94	-10.9
CSRV	14.56	8.88	Compuserve Corp.		13.06	0.06	0.5
EDFY	22.13	8.88	Edify Corp.		15.00	0.00	0.0
XCIT	35.00	7.50	Excite, Inc.		23.38	1.13	5.1
SEEK	14.50	4.38	Infoseek Corp.		8.63	-0.38	-4.2
LCOS	42.00	10.38	Lycos Inc.		34.13	1.88	5.8
NETC	23.50	7.88	Netcom On-Line (H)		21.88	-0.13	-0.6
NSCP	59.25	23.50	Netscape Comm. Corp.		27.06	-0.25	-0.9
OMKT	17.38	6.50	Open Market Inc.		9.63	-1.00	-9.4
PSIX	13.38	4.88	PSINet (L)		4.88	-0.88	-15.2
QDEK	6.31	1.44	Quarterdeck Corp. (L)		1.56	-0.06	-3.8
RAPT	23.50	8.88	Raptor Systems		11.56	-1.44	-11.1
SCUR	14.81	4.75	Secure Computing Corp.		11.88	0.00	0.0
SPYG	16.00	4.81	Spyglass Inc. (L)		4.81	-1.69	-26.0
YHOO	61.50	11.19	Yahoo! Inc. (H)		59.38	1.19	2.0
Semiconductors							**UP 2.88%**
AMD	48.50	2.69	Advanced Micro Devices		18.31	0.25	1.4
ADI	36.69	20.63	Analog Devices Inc.		25.50	0.00	0.0
CHPS	22.38	7.88	Chips and Technologies		15.25	0.19	1.2
CRUS	18.13	8.00	Cirrus Logic		11.50	-0.31	-2.6
CY	18.94	7.38	Cypress Semiconductor Corp. (L)		8.31	-0.25	-2.9
INTC	102.00	62.88	Intel Corp.		69.13	-1.56	-2.2
LSCC	74.50	38.75	Lattice Semiconductor		51.13	-0.44	-0.8
LSI	46.88	18.63	LSI Logic Corp.		19.94	-0.06	-0.3
MCRL	46.88	13.00	Micrel Semiconductor Inc.		26.63	3.75	16.4
MU	60.06	22.00	Micron Technology (L)		25.06	2.31	10.2
MOT	90.50	53.38	Motorola Inc.		56.69	1.06	1.9
NSM	42.88	21.63	National Semiconductor		25.13	0.19	0.8
TXN	71.25	30.63	Texas Instruments		44.13	3.25	8.0
VLSI	38.69	14.88	VLSI Technology		19.63	0.56	3.0
XLNX	58.50	28.50	Xilinx		34.75	2.63	8.2
ZLG	29.25	17.00	Zilog Inc.		18.75	0.75	4.2
Peripherals and Subsystems							**UP 5.02%**
ADPT	54.25	30.13	Adaptec Inc.		35.13	-1.53	-4.2
APCC	34.38	15.25	American Power Conversion		24.00	-3.88	-13.9
CREAF	29.38	8.63	Creative Technology Ltd.		19.06	2.44	14.7
RACE	24.50	3.50	Data Race Inc.		3.69	-0.50	-11.9
DTM	12.50	7.88	Dataram Corp.		8.44	0.06	0.7
EMC	32.56	14.44	EMC Corp.		25.00	-0.63	-2.4
EMLX	21.25	13.75	Emulex Corp. (L)		14.13	0.25	1.8
ESCC	35.88	22.00	Evans and Sutherland		29.38	-0.38	-1.3
EXBT	16.88	7.00	Exabyte (L)		7.00	-0.69	-8.9
IISLF	2.63	0.94	Intelligent Info. Systems		1.25	0.06	5.3
IOM	33.50	14.13	Iomega Corp.		23.44	-2.56	-9.9
IPLS	2.81	0.94	IPL Systems Inc.		1.38	0.06	4.8
KMAG	35.38	15.31	Komag Inc.		15.88	-0.38	-2.3
MTSI	34.88	13.00	Micro Touch Systems Inc. (L)		16.00	2.25	16.4
MTIC	17.88	2.63	MTI Technology Corp.		13.38	0.38	2.9
PNCL	7.81	0.13	Pinnacle Micro Inc. (L)		0.41	0.22	116.7
AQM	23.06	2.25	QMS Inc. (L)		2.88	0.44	17.9
QNTM	43.25	12.88	Quantum Corp.		19.81	0.63	3.3
RDUS	0.81	0.19	Radius Inc.		0.34	0.03	10.0
SEG	56.25	18.44	Seagate Technology (L)		20.13	0.88	4.5
SOS	19.63	5.38	Storage Computer Corp. (L)		6.00	-0.50	-7.7
STK	67.00	33.25	Storage Technology		56.00	-1.94	-3.3
TEK	46.44	31.69	Tektronix Inc.		36.88	-0.38	-1.0
WDC	54.75	14.81	Western Digital Corp. (L)		15.13	-0.81	-5.1
XRX	88.00	49.50	Xerox Corp.		69.00	-0.94	-1.3
Services							**OFF 0.63%**
AMSY	27.75	15.75	American Mgmt. Systems		22.81	-0.19	-0.8
ANLY	34.75	14.19	Analysts Int'l		30.38	0.88	3.0
AUD	58.25	26.56	Auto Data Processing		54.50	-0.19	-0.3
BDMI	29.75	19.75	BDM International Inc.		29.38	0.06	0.2
CATP	42.00	21.25	Cambridge Tech. Partners		37.38	-0.38	-1.0
CEN	47.75	29.50	Ceridian Corp.		44.94	-1.44	-3.1
CDO	34.06	18.38	Comdisco Inc.		30.75	-0.19	-0.6
CPU	38.00	13.25	CompUSA Inc.		27.31	-4.44	-14.0
CHRZ	45.63	16.75	Computer Horizons		38.38	3.50	10.0
CSC	87.75	57.88	Computer Sciences		79.19	3.50	4.6
TSK	49.38	16.63	Computer Task Group		33.38	1.63	5.1
EGGS	11.13	3.63	Egghead Discount Software		6.56	-0.25	-3.7
EDS	49.63	29.56	Electronic Data Systems Corp.		42.50	4.06	10.6
ICO	40.63	19.75	Inacom Corp.		24.69	-0.13	-0.5
INEL	8.75	2.25	Intelligent Electronics		4.94	-0.44	-8.1
KEA	39.00	12.38	Keane Inc.		34.25	0.44	1.3
MICA	29.75	12.31	Microage Inc.		14.13	-1.19	-7.8
PAYX	45.38	25.63	Paychex		44.25	3.88	9.6
PMS	68.06	40.13	Policy Management Sys.		65.00	2.00	3.2
REY	30.63	13.75	Reynolds and Reynolds		18.31	-0.19	-1.0
SCBI	22.25	10.69	SCB Computer Tech. Inc.		18.00	-0.88	-4.6
SEIC	44.50	18.75	SEI Corp.		41.69	-0.81	-1.9
SMS	66.81	36.75	Shared Medical Systems		61.81	-0.88	-1.4
SSPE	33.50	10.00	Software Spectrum Inc		12.25	-0.50	-3.9
SDS	29.88	18.50	Sungard Data Systems		27.00	-0.88	-3.1
VST	25.00	6.50	VanStar Corp.		12.88	-1.13	-8.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

Copyright Nordby International, Inc., Boulder, Colo. (nordby.com) This information is based on sources believed to be reliable, and while extensive efforts are made to assure its accuracy, no guarantees can be made. Nordby International and Computerworld assume no liability for inaccuracies. For information on Nordby's customized financial research services, call (303) 938-1877.

How to contact Computerworld

TELEPHONE/FAX

Main phone number ..... (508) 879-0700
All editors unless otherwise noted below
Main fax number..... (508) 875-8931
24-hour news tip line ..... (508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail on the Internet using the form:
firstname_lastname@cw.com.
All IDG News Service correspondents can be reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:
letters@cw.com.
Please include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone ..... (800) 552-4431
E-mail ..... circulation@cw.com.
Back Issues ..... (508) 820-8129

REPRINTS/PERMISSIONS

Phone ..... Michelle Olk, (800) 217-7874

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

Department Editors/News

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Neal Weinberg (508) 820-8177
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Michael Goldberg (508) 620-7789
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863

Senior Editors/News

Groupware, E-mail, messaging Barb Cole-Gomolski (760) 728-8858
Security, network operating systems Laura DiDio (508) 820-8182
Network/systems management Patrick Dryden (817) 924-5485
Application development Sharon Gaudin (508) 820-8122
IS management Thomas Hoffman (914) 988-9630
IS careers, social issues Julia King (610) 532-7599
Investigative reports Kim S. Nash (773) 871-3035
Mainframes, high-end storage Tim Ouellette (508) 820-8215
Databases Craig Stedman (508) 820-8120
Midrange hardware, Unix, systems integration Jaikumar Vijayan (508) 820-8220
Internetworking Bob Wallace (508) 820-8214
Intranets Carol Sliwa (508) 628-4731

Senior Writers/News

@Computerworld Stewart Deck (508) 820-8155
PCs, servers, net computers April Jacobs (508) 820-8121
Electronic commerce Sharon Machlis (508) 820-8231

Staff Writers/News

New products, multimedia, low-end storage Nancy Dillon (650) 548-5538
Mobile computing Kim Girard (650) 548-5515
Telecommunications, federal government Matt Hamblen (508) 820-8567
@Computerworld Patrick Thibodeau (508) 820-8143
PC software, application development Gordon Mah Ung (650) 548-5512
Client/server software, Unix applications Randy Weston (508) 628-4869
@Computerworld Wylie Wong (650) 548-5581

Opinions

Columns Editors Kevin Fogarty (508) 820-8246
Michael Goldberg (508) 620-7789
Steve Ulfelder (508) 620-7745
West Coast bureau chief Frank Hayes (503) 252-0100

Department Editor/Features

Managing Allan E. Alter (508) 620-7714
Technology reviews/ Buyer's Guide James Connolly (508) 820-8144

Senior Editors/Features

Special reports Gary H. Anthes (202) 347-0134
Features writer Kevin Burden (508) 620-7717
Buyer's Guide Cathleen Gagne (508) 620-7729
Management Kathleen Melymuka (508) 628-4931
In Depth Steve Ulfelder (508) 620-7745
IT Careers David B. Weldon (508) 820-8166

Associate Editors/Features

Buyer's Guide Amy Malloy (508) 620-7754
Managing Rick Saia (508) 820-8118

IDG News Service Correspondents

Paris bureau chief Jeanette Borzo (33) 1-4904-8001
UK correspondent Kristi Essick (44) 171-416-0701

Research

Bob Fink, senior research manager (508) 820-8116; Laura Hunt, research analyst; Stefanie McCann, senior graphics coordinator; Mari Keefe, online researcher.

Copy Desk

Ellen Fanning, managing editor (508) 820-8174, Roberta Fusaro, assistant managing editor; Jamie Eckle, David Ramel, senior copy editors, Michelle Davidson, senior production copy editor; Pat Hyde, Adam Parez, Monica Sambataro, Keith Shaw, copy editors; Jeremy Selwyn, senior online copy editor.

Graphic Design

Tom Monahan, design director (508) 820-8218; Janell Genovese, associate art director/features; Mitchell J. Hayes, associate art director/news; David Waugh, associate art director/online; Nancy Kowal, senior graphic designer; Carol Lieb, photo researcher/editor; Alice Goldberg-FitzHugh, Amira Harari, April O'Connor, graphic designers; Rich Tennant, John Klossner, cartoonists.

Administrative Support

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan, editorial assistants, (650) 548-5563.

Computerworld Magazines Group

(Includes Premier 100, Campus Edition, Best Places to Work, Leadership Series, Intranet Series, Emmerce and Health Care Journal.)
Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCrorey, Joyce Chutchian-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Mary Beth Welch, art director.

@COMPUTERWORLD

@Computerworld is our World Wide Web site. On it, we publish daily news and feature stories that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the @Computerworld Minute, which is an audio version of the day's top news.

A few times each week, we also have Links listings. These are resources related to online and/or print stories. We also have polls and forums that you must register for to access. The rest of the site is accessible without registering.
Contact: Johanna Ambrosio, online editor, (508) 820-8553 or johanna_ambrosio@cw.com.

Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp. 25
Aberdeen Group, Inc. 1,40
Activision, Inc. 67
Advansys Corp. 55
AI Ware, Inc. 12
Alexander LAN, Inc. 47
AlliedSignal, Inc. 58
Altec Lansing Technologies, Inc. 63
America Online, Inc. 8
America West Airlines, Inc. 37
American Airlines 60
American Biometric Co. 63
American Greetings Corp. 72
Apple Computer, Inc. 37
AT&T Corp. 1,8
AT&T WorldNet 8
Atlanta Custom Homes, Inc. 55
Attachmate Corp. 37
Aura Systems, Inc. 63
Avatar Peripherals 55
Axent Technologies, Inc. 51
Bandai America Co. 63
Bangor Hydro Electric Co. 33
BankBoston Corp. 53
Banyan Systems, Inc. 41
Barnes & Noble, Inc. 1,37
Barnett Data Systems 74
BC Telecom, Inc. 6
Beaton's Cranberry Growers Service 51
Becton Dickenson Immunocytology Systems, Inc. 17
Book Stacks Unlimited, Inc. 1
Brielle Executive Gifts 67
Britannica, Inc. 66
Broderbund Software, Inc. 67
Burlington Coat Factory Warehouse Corp. 14
Burlington Northern and Santa Fe Railway Co. 1
Business Evolution, Inc. 6
Cambridge Technology Partners 33
Camelot Publishing Co. 68
Canon Computer Services 62
Canopus Corp. 65
Cap Gemini America 2
Carlson Wagonlit Travel 10
Casio, Inc. 66
Catalina Marketing Group 55
CH Products 65
Charles River Technologies 51
Charles Schwab & Co. 12
Chemical Banking Corp. 3
Chordiant Software, Inc. 10
Cigna Healthcare of Florida, Inc. 53
Cisco Systems, Inc. 25,29,47
Clear Thinking Research, Inc. 25
Coca-Cola Enterprises, Inc. 72
Colonial Savings F.A. 3,41
Computer Associates International, Inc. 12,41,51
Con Edison Solutions 33
Concord Communications, Inc. 17,43
Connected Corp. 55
Control Data Systems, Inc. 41
Corel Corp. 25,52
D. H. Brown Associates, Inc. 14,24,25
Dana Corp. 14
Data General Corp. 16
Dataquest 52,55
Dell Computer Corp. 4,29,55,89
Delta Air Lines, Inc. 1
Delta Three, Inc. 37
Digital Equipment Corp. 14,25,33
DLJ Direct, Inc. 12
Donaldson, Lufkin & Jenrette, Inc. 86
Du Pont Co. 6
Dunlop Tire Co. 24
Eastman Kodak Co. 14
EIS International, Inc. 41
Electronic Data Systems Corp. 8,33
Elizabeth Arden Co. 41
EMC Corp. 53
Ernst & Young LLP. 12,33
ETrade Group, Inc. 12
Exabyte Corp. 53
Excite, Inc. 40
Federal Express Corp. 1
Federal Trade Commission 8
Ferris Research, Inc. 88
FileNet Corp. 41
Fleet Bank Corp. 10
Florida Keys Aqueduct Authority 53
FMC Corp. 33
Ford Motor Co. 72
Foremost Insurance Co. 16
Forrester Research, Inc. 1
Franklin Electronic Publishers 66
Frito-Lay, Inc. 1
Fujitsu Software, Inc. 40
Gale Research 41
Garmin Corp. 64
Gartner Group, Inc. 1,2,4,6,10,33,53
GATX Capital Corp. 1
Gemplus America 33
General Electric Co. 58
General Motors Corp. 1
Geneva Software 41
Giga Information Group 1,2,6
Greater Cleveland PC User Group, Inc. 6
Greylock Management Corp. 1,55
Grolier, Inc. 66
Gruntal & Co. 86
Hallmark 61
Harlem Hospital 58
Harrison Direct, Inc. 33
Hershey Foods Corp. 33
Hewlett-Packard Co. 1,24,33,53,55,71,89
Hi-Val, Inc. 66
Hitachi Data Systems Corp. 53
Hitachi PC Corp. 53
Hurwitz Group, Inc. 1,12
IBM 4,8,12,24,33,53,64,65,89
Imation Corp. 53
Immersion Corp. 90
Incredible Card Corp. 52
Influence Software, Inc. 51
Information Builders, Inc. 16
Informix Software, Inc. 40,52
Ingram-Micro, Inc. 25
Instruction Set, Inc. 74
Insurance Services Office, Inc. 53
Intel Corp. 14,24,29,53,58
Interactive Magic, Inc. 67
Interhealth 64
International Data Corp. 16,17,33,52,53,55
International Network Services, Inc. 17
Internet Security Systems, Inc. 14
Iomega Corp. 55
Ipswitch, Inc. 41
J.D. Edwards & Co. 52
J.P. Morgan & Co. 33,41
Johnson & Higgins 12
Jupiter Communications, Inc. 6
Kaiser Permanente 55
Keyport Life Insurance Co. 72
Konexx Unlimited Systems Corp. 43
L. L. Bean, Inc. 1
Learning Tree International 74
Lexis-Nexis 8
Lincoln National Corp. 1
Logitech 64
Lotus Development Corp. 1,12,41,43,88
LucasArts Entertainment Co. 63
Mantis Development Corp. 40
MapInfo Corp. 51
Masterlink, Inc. 40
Matsushita Electric Corp. 52
May & Speh 24
MCI Communications Corp. 8,10,33
MCI Systemhouse 10
McKesson Corp. 55
McKinsey & Co. 58
Meridien Research, Inc. 12
Merrill Lynch & Co. 1,12
Meta Group, Inc. 10,17,24,33,62
Metronet Communications 41
Micron Technology, Inc. 25
Microsoft Corp. 1,3,4,6,8,14,25,29,37,41,43,51,53,55,64,66,88,89
Milbank, Tweed, Hadley & McCloy 33
Mitsubishi Wireless Communications, Inc. 67
Mortgage Guaranty Insurance Corp. 53
Mozaix, Inc. 41
National Discount Brokers 6
NationsBank Corp. 41
NBC Sports 8
NCR Corp. 51
NEC America, Inc. 55
NetDynamics, Inc. 40
Netscape Communications Corp. 1,3,8,40,89
Network Integrity, Inc. 43
Nortel, Inc. 55
Northeast Consulting Resources, Inc. 41
Northeast Training Group, Inc. 74
Northern Trust Co. 14
Novartis Pharmaceuticals Corp. 12
Novell, Inc. 41,55
Novera Software, Inc. 40
Olympus America, Inc. 66
Ontario Hydro Electric 52
Oracle Corp. 1,51,52,61,74,89
Outsourcing Institute Ltd. 17
Overland Data, Inc. 53
Pacific Bell Corp. 4
Pacific Exchange Co. 55
Pacific Gas and Electric Co. 53
Paging Network, Inc. 10
Patricia Seybold Group 12,51
PC Docs, Inc. 37
PeopleSoft, Inc. 2,61
Platinum Technology, Inc. 52,74
PNC Bank Corp. 4
Pratt & Whitney 8
Price Waterhouse LLP 33
Prudential Securities, Inc. 12
Psion, Inc. 55
Qualcomm, Inc. 88
Radica USA Ltd. 63
Rand McNally & Co. 64
RealMed Corp. 33
Research Board, Inc. 1
Royal Bank of Canada 1
RSL Communications Ltd. 37
Rubin Systems, Inc. 2
SafeGuard Interactive, Inc. 55
SAP AG 1,61
SAP America, Inc. 2
SCO, Inc. 14
Scopus Technology, Inc. 33
Scotia Capital Markets 6
SCT Utility Systems, Inc. 33
Seagate Technology, Inc. 86
Shared Medical Systems Corp. 12
Sherwood Research, Inc. 55
Shorenstein Co. 53
Silicon Graphics, Inc. 25
SmithKline Beecham Consumer Health Care 12
Software Artistry, Inc. 8
Storage Technology Corp. 8,53
Strategic Research Corp. 53
Summit Strategies, Inc. 14,25
Sun Microsystems, Inc. 1,3,14,24,40,89
Symantec Corp. 6,14
Synon Corp. 4
Tech Data Corp. 25
Technology & Business Integrations, Inc. 33
The Baan Co. 61
The Berkshire Group 72
The Chase Manhattan Bank Corp. 3,51
The Coca-Cola Co. 33
The Feld Group 1
The Foxboro Co. 33
The Knowledge Exchange Co. 74
The Learning Co. 66
The Pelorus Group 41
The Reader's Digest Association, Inc. 33
The Sharper Image 66
The Walt Disney Co. 1
The Yankee Group 17,53
Thomas & Betts 12
Tiger Electronics, Inc. 63
Tivoli Systems, Inc. 8,41
Toshiba America Systems, Inc. 53
Tucker Anthony, Inc. 25
U.S. Airways 41
Uniden America Corp. 67
UniKix Technologies 33
Unison Software, Inc. 52
Unisys Corp. 33
United Technologies 33
VeriFone, Inc. 55
Virus Bulletin Ltd. 14
Western Digital Corp. 86
Winnov, Inc. 65
WorldCom, Inc. 89
Xerox Corp. 33
Xilinx, Inc. 6
Yahoo, Inc. 40
Yankee Energy Systems, Inc. 2
Zircon Corp. 67
Zona Research, Inc. 52

GATX molds R/3 to comply

CONTINUED FROM PAGE 1

Squeezing the necessary functionality out of R/3 required a team of GATX business and technical users to spend six months wading through the massive R/3 system looking for hidden functionality. "We were looking for things that looked the same as what we do but called something different," Cromar said.

Eventually, GATX found many of the functions it needed in such unlikely places as R/3's retail applications and in a new service management module designed for plant maintenance.

GATX found that by looking beyond the basic description of many modules and substituting its own needs — such as replacing the words "power generating plant" with the word "aircraft" — it could get the basic functionality it sought.

Then a team of 30 code writers set out on a five-month task of lashing together the disparate modules using SAP's ABAP development language. It took a total of 3,656 pages of GATX's custom code.

But that was still much cheaper and easier than the alternative: trying to patch together software from a plethora of vendors to create a quasi-integrated ERP system, Cromar said.

At the outset, analysts and consultants told GATX that customizing R/3 would be too costly and risky. GATX proved them wrong. The firm spent less than half of the $15 million that consultants estimated it would cost.

Cromar said GATX built about 35% to 40% of the features itself, while the rest existed in R/3.

Josh Greenbaum, an analyst at Hurwitz Group, Inc. in Framingham, Mass., warned that not all companies may be up to such a challenge.

"It was a relatively risky proposition," Greenbaum said. "I would tend to caution companies against taking that level of risk unless you can really see the reward at the end of tunnel. In this case, it worked very well."

For GATX, the payback means becoming a virtually paperless company, with leasing transactions flowing through R/3 rather than in/out baskets on employees' desks.

"You should see what we have to go through now to record an invoice," said Carol Lampson, manager of accounting. "We have 15 different colored forms we have to use. It's a blizzard of paper. SAP is so much more logical." □



ROBERT HOLMGREN

GATX's Michael Cromar: Customizing R/3 was cheaper and easier than patching together products from different vendors



The Garden Escape Web site takes orders automatically, but refunds and exchanges are done by phone

E-retail in reverse

CONTINUED FROM PAGE 1

some sites to fall victim to transaction systems that can't reverse an order as elegantly as they accept one.

"In January, there will probably be a lot of reports in the newspapers about disgruntled [online] consumers," said Erica Rugullies, an analyst at Giga Information Group in Cambridge, Mass. "But we will also see some success stories about merchants doing it right."

"Your systems have to be synchronized. It gets tricky," said Chris Stevens, an analyst at Aberdeen Group, Inc. in Boston. "You need a substantial amount of systems integration."

Traditional catalog companies that have moved online probably are among the best positioned, analysts said, because they already have the infrastructure to handle large amounts of returned merchandise.

At L. L. Bean, Inc. in Freeport, Maine, online ordering meshes seamlessly with inventory management and shipping systems, said spokesman Catherine Hartnett. "Why set up something different if you don't need it?"

But for most sites, the return process is likely to be more manually intensive than the initial ordering.

Garden Escape, Inc. (*www.garden.com*) wants its customers to telephone before returning a gift, in part so the company can collect data about unpopular items. "We will have full staff on [Dec. 26] until 2 a.m.," said Nancy Mahoney, director of customer solutions.

That lessens one of the prime attractions of Web-based ordering: taking expensive human labor out of the order-entry process. But Mahoney said Garden Escape wants the chance to mollify any unhappy customer personally. If a product is damaged, Garden Escape will arrange a Federal Express package pickup for the gift return and will pay for it, she said. Return instructions are included with the product when shipped. Once a customer gives an order number, Garden Escape staff members can call up the order and hit a button for refund, exchange or 110% company credit.

Staffers at Book Stacks Unlimited, Inc. (*www.books.com*) route returns to customer service, where the status of the book is changed in the customer's account and a credit is arranged. Customers are notified by electronic mail that the return was received and the account credited. It is a little less automated than order entry, said Mary Fair-Taylor, director of marketing.

Notifying consumers of online return policies will be one key to avoid confusion. Several major retailers that sell in stores and online, such as Barnes & Noble, Inc. and The Walt Disney Co., said gifts purchased on their Web sites shouldn't be returned to a local store.

Retailers have to make sure that service representatives can pull up order information and arrange credit or exchanges, Stevens said. "It's what separates the men from the boys in electronic commerce," he said. □

NCR sells manufacturing operations for $100M

By Jaikumar Vijayan

SOLECTRON CORP. in Milpitas, Calif., has agreed to acquire NCR Corp.'s computer and retail product manufacturing operations for an estimated $100 million.

Under the plan, which was positioned as an outsourcing deal late last week, Solectron will buy NCR's manufacturing assets in Atlanta, Columbia, S.C., and Dublin. The facilities are used to build NCR's servers, retail scanners and point-of-sale terminals.

Solectron will hire about 1,200 of NCR's manufacturing and related support employees.

The move fits in with NCR's strategy of trying to focus on its core competencies, which are high-availability transaction processing servers and data warehousing, said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston.

TURNING ITSELF AROUND

Since spinning off from AT&T Corp. last year, NCR has divested itself of its PC manufacturing and support business, Eckerson said.

"It is a kind of evolutionary thing for them," Eckerson said.

NCR is struggling to turn its business around. In its last quarter ended Sept. 30, for instance, the company reported a $9 million loss on revenue of $1.6 billion. That compared with a loss of $33 million on revenue of $1.7 billion a year earlier.

Solectron is a $3.7 billion provider of manufacturing services to OEMs. It has 18 manufacturing facilities around the world. □

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0385697. Computerworld (ISSN 0010-4841) is published weekly: except a single combined issue for the last two weeks inDecember by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1997 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints (minimum 100 copies) and permission to reprint may be purchased from Michelle Olk, Computerworld Reprints, c/o Reprint Services, 315 Fifth Ave. Northwest, St. Paul, Minn. 55112, (800) 217-7874. Fax: (612) 633-1862. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $3 a copy: U.S. — $48 a year; Canada — $110 a year; Central & So. America — $150 (surface) a year; Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

COMMENTARY

One man's wish list

Dan Gillmor

New York is a fantasyland in December, aglow with the lights of the holiday season. It turns out to be an entirely appropriate time of year for the annual Internet World trade show, an ever-growing event that has tended to combine myth and money.

Most enterprises, stung by Internet mythology — including false claims and unfounded optimism — have outgrown their belief in a 'net Santa. Now, as the recent show demonstrated, they've moved their attention firmly to reality and the bottom line. That was reflected in Internet World '97's relentless focus on commerce and on making the technology truly work.

This is a season that sparks hope, even amid disappointments about the past. In that spirit, let's talk about gifts — enterprise and consumer-oriented — that we'd like to see the high-tech industry provide in the coming year. Heading my wish list are the following:

An even stronger focus on cost of ownership. Whether the answer is Windows NT 5.0 or the network computer or something else, the need for robust, reliable, cheap-to-maintain information systems remains at or near the top of everyone's list. After years of promises, let's see it happen.



Stronger antitrust action against Microsoft. The U.S. Department of Justice's belated enforcement of a generally toothless 1995 consent decree has resulted in a federal judge's temporary order that Microsoft stop forcing manufacturers to bundle its Internet Explorer browser with Windows 95. That will prove to be a hollow act as Microsoft legitimately builds Web-browsing and other Internet functions in to its operating systems. The Justice Department surely recognizes that it must file a new antitrust case to prevent one company from grasping the choke points of tomorrow's commerce and communications.

Antitrust action against the local telephone companies. Sometimes, those tried-and-true monopolists make Microsoft look positively benign. The telephone companies are holding back construction of the most vital bridge to the Information Age: ample bandwidth. So far, telecom deregulation has led to a wave of mergers, with little apparent competition resulting. This is a huge scandal. Maybe the newly rejuvenated Justice Department Antitrust Division will take a look.

True cross-platform Java. Although Java's clearly turning into a success as a programming language, particularly on the server, Sun and its allies haven't come close to making the laudable idea of write once, run anywhere a reality. Let's hope that Sun and friends accelerate their progress. (Let's also hope that Microsoft doesn't succeed in Unix-ifying Java through its strategy of adding Windows-only enhancements.)

More honesty. The technology business is notorious for its tendency to stretch the truth. Companies launch announcements long before they launch actual products. The computing press takes careful notes, serving as well-paid stenographers, but too often fails to point out when the emperors (and would-be emperors) are wearing few, if any, clothes.

Learning, wisdom and humility. We all need more of each.

A personal note: Living in Silicon Valley, surrounded by some of the smartest and most energetic people on the planet, is an excellent humility booster. I have the rare privilege of loving my work, but it would be an empty pleasure without your ideas and criticism. Whether you agree with me or think I'm completely off base, please stay in touch. □

Gillmor is computing editor at The San Jose Mercury News. *His Internet address is dgillmor@sjmercury.com.*

The big three stories of 1997

David Moschella

It's been a good year for the IT industry — especially if you're in information systems, live in the U.S. or work for Microsoft. A few people even manage to do all three.

Looking back at the 50 columns I've written in the past 12 months, here's my take on the year's three biggest stories, along with a list of runners-up and those that will have to wait until next year.

1. Business reclaims the Internet. Forget about chat rooms, virtual communities, long-distance learning, electronic pen pals and other New Age idylls. This year, it became clear that the business of the Internet is business. Electronic commerce, extranets, supply-chain management and global collaboration now sit atop the Internet agenda.

IBM's new ads say it all: Flashy Web sites are out, transforming business functions is in. Forecasts for electronic-commerce sales are being hastily revised upward.

As a result, IS's profile also is on the rise. CEOs in many industries are developing a gut feeling that IT and the business itself are becoming one. How else can you explain the fact that IS's credibility is rising despite an embarrassing debacle like the year 2000 problem? In any other time, huge expenditures on something as fruitless as the millennium bug would have scarred the profession for years.



2. Microsoft stands alone. During 1997, Microsoft locked up much of the enterprise and positioned itself to dominate the Internet as well. In May, it threw itself a coming-out party called Scalability Day, putting even mainframes on notice. By the fall, it was clear that Netscape's momentum had been stopped cold.

It's not so much that the company has become the air the entire industry breathes; it's that Microsoft also gets first crack at the oxygen. Major software initial public offerings have been reduced to a trickle, and no one buys Novell or really helps Netscape for fear of crossing Microsoft's path. That the Department of Justice is finally taking Microsoft seriously is testimony to the company's incredible year. From bankers to retailers to Hollywood, everyone's watching to see what comes next.

3. U.S. trades places with Asia. The bursting of bubbles all around the Pacific Rim has rejuvenated global support for U.S.-style capitalism. Restructuring, flattening, deregulation, outsourcing, venture capitalism, public disclosure, globalization and a heavy dose of IT are now seen as the winning formula. That technology is at the heart of all those issues can't help but give renewed momentum to the IT industry.

As good as all this feels, resist smugness. Remember how tightly bound the U.S. and Asian economies really are.

Although these three stories towered above the rest, there were other successes worth mentioning:

The dramatic surge of Dell, IBM's renewed services dominance, the expansion of fortress HP into PCs and electronic commerce, the emergence of sub-$1,000 PCs, the out-of-nowhere ascendancy of WorldCom, Oracle's widening DBMS lead and Sun's emergence as the last real Unix vendor.

Then there were the no-shows — products and ideas that, despite all the ink, will have to wait until next year to have any real impact: Java and ActiveX; CORBA and DCOM; network computers, NetPCs and handhelds; Web TV and cable set-top boxes; Gigabit Ethernet, ADSL, ISDN and 56K modems; and push and desktop channels.

That's 1997 in 600 words. Tune in next week for a first look at 1998. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is david_moschella@cw.com.*

The Back Page

alt.cw

Dispatches & images from the fringes of the electronic frontier

CRUMBS IN THE KEYBOARD



Eight out of 10 Internet users snack when they use their PCs, according to a survey by the Snack Food Association in Alexandria, Va. The cosmic significance of this development is that although TV snacking is still most common, "Internet snacking" is growing as people trade their TV remote controls for the mouse. Thirty-five percent of the 8,000 Internet users surveyed said they do "most" of their snacking at the computer. And 71% claimed they eat low-fat snacks.

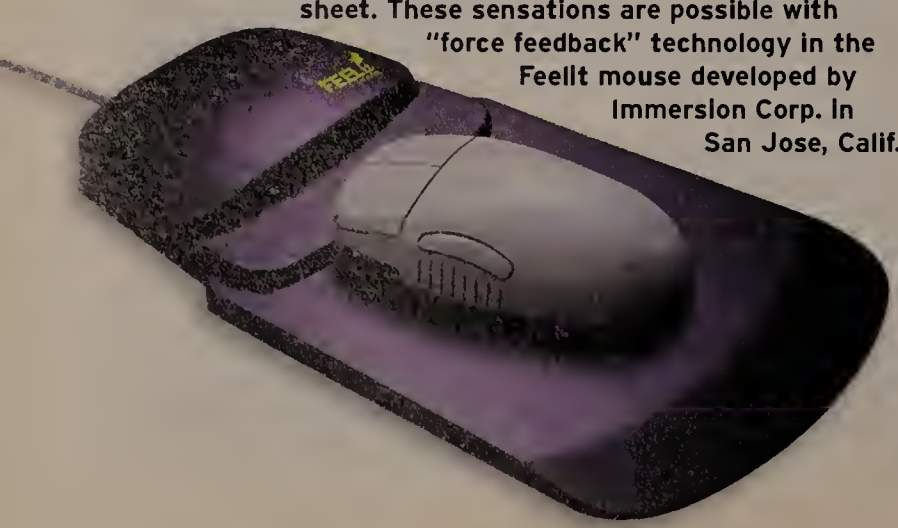
MARC ROSENTHAL

Surviving information glut

David Shenk's recent book *Data Smog* (Harper, 1997) offers the following advice: Take cleansing data fasts and data naps – regular breaks away from exposure to information.

Get in touch with your work

Feel the weight of an icon as you drag it across the screen. Feel the cursor bump into the edge of the window. Feel the page breaks in a document and the columns of a spreadsheet. These sensations are possible with "force feedback" technology in the FEELit mouse developed by Immersion Corp. in San Jose, Calif.



Computerworld INDEX

Projected 1998 growth rate for shipments of U.S. computer equipment: **30%**

Ford Motor Co. employees who use the corporate intranet: **85,000**

Companies with employee complaints about offensive E-mail: **22%**

Companies that lack a policy on appropriate E-mail usage: **48%**

Companies that lack a policy on appropriate Web usage: **70%**

CIOs who say they are "very unlikely" to implement network computers: **17%**

Source: U.S. Department of Commerce, Washington; Ford Motor Co., Dearborn, Mich.; Society for Human Resource Management, Alexandra, Va.; RHI Consulting, Inc., Menlo Park, Calif.; PA Consulting, Brussels

Inside Lines

A Microsoft Christmas carol

(This ditty was wrapped and tossed over the electronic transom)

'Twas the night before Christmas, when all through the house
Not a creature was stirring, except Papa's mouse.
The computer was humming, the icons were hopping
As Papa did last-minute Internet shopping.

The stockings were hung by the modem with care
In hope that St. Nicholas would bring new software.
The children were nestled all snug in their beds
While visions of computer games danced in their heads.

Dark Forces for Billy, and Doom II for Dan
And Carmen Sandiego for Pamela Ann.
The letters to Santa had been sent out by Mom
To santaclaus@toyshop.northpole.com

Which has now been re-routed to Washington State
Because Santa's workshop has been bought by Bill Gates.
All the elves and reindeer have had to skedaddle
To flashy new quarters in suburban Seattle.

After centuries of a life that was simple and spare,
St. Nicholas is suddenly a new billionaire
With a shiny red Porsche in the place of his sleigh
And a house that's near Bill's; it's just down the way.

The elves have stock options and desks with a view,
Where they write software games for Johnny and Sue.
No more dolls or tin soldiers or little toy drums
Will be under the tree, only compact disk ROMS.

They have Microsoft labels, so spin up your drive
For now Christmas runs only on Win 95.
More rapid than eagles the competitors came
And Bill whistled, and shouted, and called them by name:

"Now, Adobe. Now, Claris. Now, Intuit, too.
Now, Apple and Netscape, you are all of you — through!"
It is Microsoft Santa that the kids can't resist
It's the ultimate software with a traditional twist.

Recommended by no less than the jolly old elf,
On each package, a picture of Santa himself.
Get 'em young, keep 'em long, is Microsoft's scheme
And a merger with Santa is a marketer's dream.

To the top of the Nasdaq, to the top of the Dow.
Now dash away, dash away, dash away — WOW!
And Mama in her 'kerchief and I in my cap,
Had just settled down for a long winter's nap.

When out on the lawn there arose such a clatter,
The whir and the hum of our satellite platter,
As it turned toward that new Christmas star in the sky,
The Santalite owned by the Microsoft guy.

As I sprang from my bed and was turning around,
My computer turned on with a jingle-bells sound.
And there on the screen was a smiling Bill Gates,
Next to jolly old Santa, two arm-in-arm mates.

And I heard them exclaim in voice cheery and bright,
Have a Microsoft Christmas, and to all a good night.

If you're caught up in the spirit of the season and have holiday greetings you want to send along or any type of news tip, contact news editor Patricia Keefe at (508) 820-8183 or patricia_keefe@cw.com.

NEW APPLICATIONS ARE

REWRITING

HE BOOK ON HOW YOU USE

INFORMATION.

NTRODUCING THE FIRST DATABASE

FAMILY

DESIGNED TO READ IT.



STARTING TODAY, THE RULES HAVE CHANGED. SYBASE'S NEW ADAPTIVE SERVER™ PRODUCT FAMILY IS GOING TO HELP YOU USE INFORMATION MORE POWERFULLY THAN EVER BEFORE. THAT'S BECAUSE ADAPTIVE SERVER IS BASED ON A NEW ARCHITECTURE THAT IS OPTIMIZED FOR SPECIFIC APPLICATION REQUIREMENTS. ◣ OUR OPTIMIZED DATA STORE APPROACH HANDLES TODAY'S CUSTOMER-CENTRIC APPLICATIONS, SUCH AS THE INTERNET, DATA WAREHOUSING, E-COMMERCE AND MOBILE COMPUTING. INSTEAD OF A ONE-SIZE FITS ALL APPROACH, YOU HANDLE INFORMATION ON YOUR TERMS. ◣ ADAPTIVE SERVER ALSO FEATURES COMMON SERVICES ACROSS ALL DATA STORES. THESE SERVICES INCLUDE AN EASY TO USE MANAGEMENT INTERFACE, COMMON DATA ACCESS AND MOVEMENT, WEB ACCESS AND INTEGRATED SECURITY. ◣ AT THE HEAD OF OUR FAMILY IS ADAPTIVE SERVER ENTERPRISE, WHICH CONTINUES TO BE A MARKET LEADER IN MAINLINE OLTP PERFORMANCE AS WELL AS MIXED WORKLOAD ENVIRONMENTS. ◣ THE ADAPTIVE SERVER FAMILY IS THE CORNERSTONE OF OUR ADAPTIVE COMPONENT ARCHITECTURE™, AN OPEN, INTEGRATED, END-TO-END ARCHITECTURE THAT INCLUDES EVERYTHING FROM HIGH PERFORMANCE SERVERS TO LEADING EDGE MIDDLEWARE AND ENTERPRISE DEVELOPMENT TOOLS. AND IT'S SOMETHING YOU SHOULD DEFINITELY BE READING UP ON. ◣ TO DO JUST THAT, VISIT US AT WWW.SYBASE.COM/ADAPTIVESERVER. OR CALL FOR OUR FREE INFORMATION KIT ON THE ADAPTIVE SERVER FAMILY AT 1-800-8SYBASE (REF. ASCW).

ADAPTIVE SERVER
PART OF OUR ADAPTIVE COMPONENT ARCHITECTURE

SYBASE®

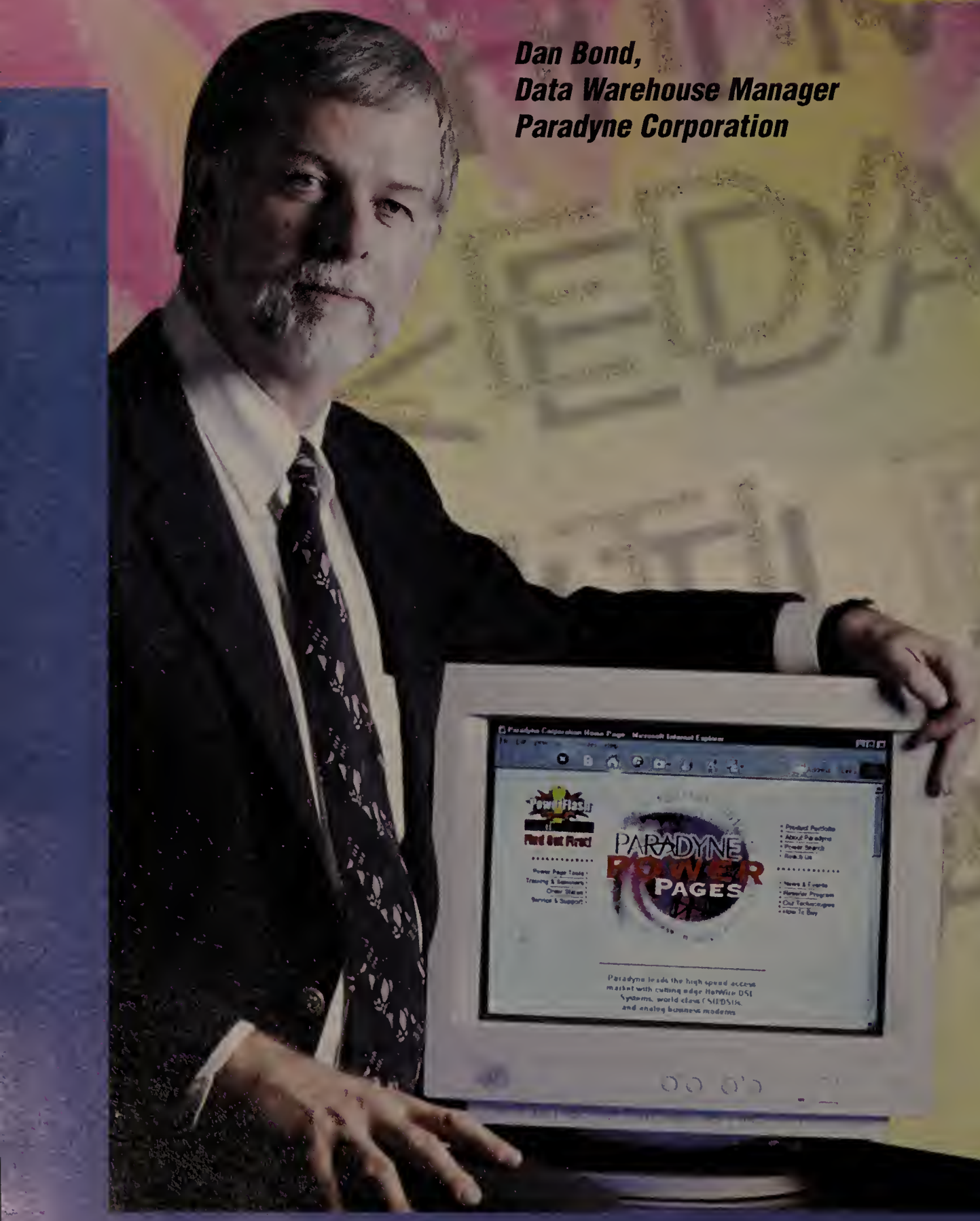
THE FUTURE IS WIDE OPEN.™

©1997 SYBASE, INC. ALL RIGHTS RESERVED. ALL TRADEMARKS ARE PROPERTY OF THEIR RESPECTIVE OWNERS.

SYBASE.COM

Σ

"Our customers were on the Web. Our data was on the mainframe. Our solution was call The Builders."



Dan Bond,
Data Warehouse Manager
Paradyne Corporation

Paradyne Corporation, a pioneer and leader in digital network access, has customers who not only want fast network access, they want fast answers on the status of their orders as well. And that used to mean the company had to process thousands of individual phone calls and manual queries against mainframe transaction data. The company knew the answer was a self-service application on the Web; but how could they integrate a Web reporting system with mainframe legacy data? The answer... EDA middleware and WebFOCUS from Information Builders.

Web Access to Legacy Data

Using Information Builders EDA middleware and WebFOCUS reporting engine, Paradyne customers are now able to launch dynamic queries against live mainframe data. The whole system was built in 90 days. And in less than two months Paradyne reduced order status telephone calls by over 40%, enhanced customer relations, and stimulated new business by driving customers to its Web site.

Call THE BUILDERS

Want to build cutting-edge Web applications that can access, update, or create dynamic reports from live data resident in any application or database? Call THE BUILDERS at (800) 969-INFO or visit our Web site at www.ibi.com.

CALL THE BUILDERS

www.ibi.com
(800) 969-INFO
In Canada call (416) 364-2760

EDA and Webfocus are trademarks of Information Builders, Inc., NY, NY. E-mail: info@ibi.com.

Information Builders®

Uniting the WEB and the Enterprise